SOURCES OF SUPPLY OF OIL AND OTHER PETROLEUM PRODUCTS FOR THE WEST COAST OF THE UNITED STATES FOR MILITARY AND OTHER REQUIREMENTS

UNIVERSITY
OF MICHIGAN

OCT 31 1955

MAIN
READING ROOM

HEARINGS

BEFORE THE

SUBCOMMITTEE FOR SPECIAL INVESTIGATIONS

OF THE

COMMITTEE ON ARMED SERVICES
HOUSE OF REPRESENTATIVES

EIGHTY-FOURTH CONGRESS

FIRST SESSION

UNDER THE AUTHORITY OF

H. Res. 112

JULY 7, 11, 12, AND 26, 1955

Printed for the use of the Committee on Armed Services

Part 1

UNITED STATES
GOVERNMENT PRINTING OFFICE
65499 WASHINGTON : 1955

SUBCOMMITTEE FOR SPECIAL INVESTIGATIONS

F. EDWARD HÉBERT, Louisiana, *Chairman*

OVERTON BROOKS, Louisiana	WILLIAM E. HESS, Ohio
L. MENDEL RIVERS, South Carolina	LEON H. GAVIN, Pennsylvania
O. C. FISHER, Texas	PAUL CUNNINGHAM, Iowa
PORTER HARDY, JR., Virginia	WILLIAM H. BATES, Massachusetts
GEORGE P. MILLER, California	CHARLES P. NELSON, Maine

EX OFFICIO

CARL VINSON, Georgia	DEWEY SHORT, Missouri

JOHN J. COURTNEY, *Special Counsel*
EDWARD T. FOGO, *Staff Assistant*
LLOYD R. KUHN, *Staff Assistant*

CONTENTS

Page

Testimony of—
- Flemming, Hon. Arthur S., Director, Office of Defense Mobilization 790
- Fox, Stark, Executive Vice President, Oil Producers Agency of California 832
- Glasco, Lowell, president, West Coast Pipeline Co 1139
- Kendall, Charles H., General Counsel, Office of Defense Mobilization 790
- Kirk, William F., manager of the economics department, General Petroleum Corp 913
- McGanney, D. J., president, Southern Pacific Pipe Lines, Inc 868
- Merryweather, Hubert O., representative of Governor Ernest W. McFarland, of Arizona 890
- Miller, Frank G., professor of petroleum engineering, Stanford University 879
- Minckler, Robert L., president, General Petroleum Corp., and director, Western Oil & Gas Association 805
- O'Neill, Donald B., executive vice president, Independent Refiners Association of California 850
- Peterson, T. S., president, Standard Oil Company of California 901
- Seaman, Leonard R., executive vice president, San Joaquin Valley Oil Producers Association 858
- Spratt, J. Grant, president, Trans Mountain Oil Pipe Line Co., Vancouver, British Columbia 873
- Steward, H. A., Director, Office of Oil and Gas, Department of the Interior 793
- White, Brig. Gen. W. W., representing the Secretary of Defense 785

Additional data—
- Letter of January 29, 1955, to Hon. Arthur S. Flemming, Director, Office of Defense Mobilization, from Hon. Dewey Short, Member of Congress 767
- Excerpt from Executive order of the President, No. 10469, dated September 26, 1953 770
- Estimated Proved Recoverable Reserves of Crude Oil of the United States, from Oil and Gas Journal, January 31, 1955 773
- Estimated Proved Recoverable Reserves of Natural-Gas Liquids in the United States, from Oil and Gas Journal, January 31, 1955 774
- Giant Fields Versus All Fields, from Oil and Gas Journal, January 31, 1955 774
- Excerpt from report of Special Committee Investigating National Defense Program pursuant to Senate Resolution 71, dated April 1948 892
- Report by United States Bureau of Mines on refinery capacity of district 5 as of January 1, 1954 914
- Receipts of crude petroleum and petroleum products into Pacific coast territory from other areas, years 1942–45, United States Bureau of Mines, statement form 1–B 924
- Telegram of transmittal and outline by I. N. McKinnon, Chairman of the Petroleum and Natural Gas Conservation Board, Province of Alberta, of the history of production and producability from 1947 through 1954 and an estimate to 1960 925
- Telegram releasing address by W. O. Twaits, vice president and director, Imperial Oil, Ltd 927
- Address by W. O. Twaits, vice president and director, Imperial Oli, Ltd 927
- Telegram releasing article from Oil and Gas Journal, July 11, 1955, edition 932

Additional data—Continued Page
Article from Oil and Gas Journal, July 11, 1955, edition entitled "Canada's Rising Oil Flow to the United States" 932
Corrections by R. L. Minckler to his testimony of July 11, 1955 938
Unclassified testimony, summary of Hon. Arthur S. Flemming 938
Unclassified testimony, H. A. Steward, Director, Office of Oil and Gas, Department of the Interior 938
Robert L. Minckler, president, General Petroleum Corp., and director of Western Oil & Gas Association, Progress of the Petroleum and Natural Gas Industries in the Western States, etc., including exhibits 1–9 947
Subcommittee for special investigations press release, July 8, 1955 1137
Telegram dated July 14, 1955, from W. W. White to Hon. F. Edward Hébert, re press release 1138
Bulletin of Petroleum Administration for Defense, Crude for Midwestern Refineries 1148
Table of petroleum demands in district 5 1152
Glasco exhibits 1–4 1162–1165
Appendix I: Letter of transmittal from Lowell M. Glasco to Hon. F. Edward Hébert, re Oil Thirst, the Wall Street Journal, July 27, 1955; testimony of Grove Lawrence, vice president, Southern California Gas Co., before Federal Power Commission on July 25, 1955 1166
Appendix 2: Letter of transmittal and statement of A. P. King, Jr., president of Texas Independent Producers & Royalty Owners Association 1169

SOURCES OF SUPPLY OF OIL AND OTHER PETROLEUM PRODUCTS FOR THE WEST COAST OF THE UNITED STATES FOR MILITARY AND OTHER REQUIREMENTS

THURSDAY, JULY 7, 1955

HOUSE OF REPRESENTATIVES,
COMMITTEE ON ARMED SERVICES,
SUBCOMMITTEE FOR SPECIAL INVESTIGATIONS,
Washington, D. C.

The subcommittee met at 10 a. m., with the Honorable F. Edward Hébert (chairman) presiding, and the following members present: Mr. Hess, Mr. Rivers, Mr. Fisher, and Mr. Short.

Mr. HÉBERT. The committee will come to order.

Members of the committee, I have a statement to read into the record at this time, after which I will ask Mr. Short to make a statement.

Mr. Short introduced in this Congress Resolution 212 calling for a study of the following:

1. The sources of supply of oil and other petroleum products for the west coast of the United States for military and other requirements;

2. The amount of oil and other petroleum products needed on the west coast of the United States to meet the ordinary military and other requirements; and

3. Whether in the event of a national emergency there are adequate supplies of oil and other petroleum products on hand on the west coast of the United States to meet all military and other requirements.

The Chairman, Mr. Vinson, has directed that we proceed with the consideration of the facts. Mr. Short, who is a member of this subcommittee, will participate in the hearings.

For the information of everyone concerned, we will hear first from the Department of Defense; next from the Office of Defense Mobilization; and then from the Department of the Interior. Because of the business on the floor during the legislative session, we may have to interrupt the proceedings from time to time. However, for the convenience of witnesses and in the public interest, we will take the testimony of interested organizations and individuals in Los Angeles, Calif., commencing on Monday, Tuesday, and Wednesday of next week, July 11, 12, and 13. So far, there have been six organizations whose representatives have been assigned time for hearing; and there may be others.

This morning, the National Security Council is in session and therefore the Department of Defense and the Office of Defense Mobilization cannot be present. Each of these departments has invoked a provision of our rule 7 calling attention to the fact that some of the information

bearing on the subject of this inquiry is of a classified nature. Therefore, this afternoon the subcommittee will go into executive session. This morning, there will be read some of their statements, as much as can be discussed in public.

After the subcommittee will have returned from the west coast, we will hear such witnesses as have further information on the subject, who are located here in Washington and elsewhere in the central and eastern part of the country.

An inquiry of this general nature was conducted in the 80th Congress pursuant to resolution of the House. But the factual situation since that time has changed, we may assume, materially since the war. Our question, therefore, is whether, in the condition of things as they stand now, there is need for additional pipeline facilities from the Texas and central western fields and perhaps other sources to the west coast, for any burden that might be placed upon the economy and resources of that area in a national emergency.

The subcommittee is desirous of obtaining all of the facts from informed sources so that there may be assembled in one place a source of information on this subject which will assist the Congress in arriving at an adequate and fair judgment of the problem as it exists.

With that in mind, any person or organization having information which would be of interest to the subcommittee is invited to contact our staff and arrange for presentation of that material. The public has been uniformly cooperative with the subcommittee in its inquiries, and of course we trust that this inquiry will be no exception to that rule. We recognize that much of this discussion relates to economics and to technical and scientific matters as well, and, therefore, we desire to drawn upon information available in these categories, so that the findings of the subcommittee may be of value because fortified by a thorough factual background. Let me also state that the subcommittee has no preconceived notions and has not prejudged nor predetermined any portion of this subject. We approach the whole subject with an open mind to make a thoroughly objective study.

I think I should state that both Mr. Rivers, who is at present a member of this committee, and myself were members of the Petroleum Subcommittee of the Committee on Naval Affairs which made a study of pipeline transportation and the movement of petroleum products in 1943 during the 78th Congress. It may be interesting to note during that time and in that report of Mr. Rivers, who was the chairman, on page 13, we made the following unanimous recommendation:

> It is urged that the responsible Government agencies be on the alert to guard against the occurrence of a situation on the west coast such as took place on the east coast in the past winter and spring. In such connection, it is recommended that the Petroleum Administration for War investigate the feasibility and desirability of constructing a crude oil pipeline from the oil-producing regions of Wyoming to the refineries in the vicinity of Spokane, Wash.; a products pipeline from central California north to the Columbia River; and a crude-oil pipeline from the west Texas and New Mexico oil fields to the Los Angeles refinery area, and report the results of such inquiry to this subcommittee.

Now I am going to ask Mr. Short, whose long interest in this subject and whose great familiarity with the whole matter is a result of his earlier hearings and his continuing interest, to make a short statement for the information of the subcommittee.

Mr. SHORT. Mr. Chairman, first I want to compliment the chairman of this subcommittee for the very clear, fine, and fair opening statement that he has made concerning this particular hearing or study.

I don't want to unduly trespass upon the time and patience of this committee, but I think if I am allowed to take a few minutes at the beginning, we can get a background, a clear picture of really what our particular problem is, or the reason I introduced the resolution that called for this survey or study.

As you are well aware, this is no new problem at all, because as the chairman of this committee stated, both he and Mr. Rivers, as members of the old Naval Affairs Committee, before we passed the Reorganization Act that brought the Naval and Military Affairs Committees into the present Committee on Armed Services—they made quite an extensive study on the oil situation back in 1943 or 1944. The chairman of our present committee, the full committee, Mr. Vinson, revealed tremendous interest in it in 1946. And a couple of years later, as chairman of a subcommittee in the 80th Congress, I spent 3 months, with the help of our chief clerk at that time, Mr. Bryce Harlow, who is now one of the assistants to the President down at the White House, in holding rather comprehensive and exhaustive hearings, during the months of January, February, and March 1948. We held hearings practically every day those 3 months, both morning and afternoon.

And I think perhaps it might be helpful, if I am permitted—and I am very grateful to the chairman for giving me the opportunity to take these few minutes—if I would read, not only for the benefit of the committee but for the public and for all interested parties here the statement that I made on Monday, January 19, 1948, as chairman of the subcommittee that met at 10 o'clock that morning:

Mr. SHORT. The committee will be in order.

During the recess between the first regular session of the 80th Congress last year and the special session which was called in November, Mr. Cole of New York, with the other members of this committee, made a trip through the Pacific and with some other members of this committee made a trip through Europe, the Near East, and north.

On our return from those two tours, Mr. Cole and I both gave a report of our observations and studies on these trips. The committee became intensively interested in the world oil situation. It was suggested by the former chairman of the Naval Affairs Committee, Mr. Vinson, of Georgia, that because of the acute shortages we should make a survey and a thorough study, as much as our time would permit, into this whole interesting, important, and difficult problem.

For the witnesses here today and for those to follow, a brief background statement may be helpful to explain why, in our view, this inquiry is necessary and what its scope is to be.

As far as the necessity for the inquiry, it requires no insight or extensive study to realize that this Nation is becoming so dependent upon petroleum and petroleum products that even in peacetime vital demands of the economy are outstripping the productive capacity of the oil industry.

Of course America is a Nation on wheels. Oil is essential not only in time of peace, it is our life blood in time of war.

The present shortages of tank cars, tankers and pipelines, lack of equipment for increased exploratory and developmental work, these are happily only temporarily problems which should ease relatively soon, but the adequacy of our crude supply of oil, the rate of discovery of new oil fields in the fact of constant accelerating oil demands, these are serious problems, indeed, and have been becoming steadily more serious since shortly before the last war.

With domestic demand for petroleum to fuel diesel locomotives, hosts of trucks, tractors and automobiles, electric generators, home heaters, shipping and heavy industry growing at an astonishing rate yearly, surpassing even the peak war consumption long ago, and with the easing if this demand not even in sight, but on the other hand with new oil discoveries falling steadily behind consumption, this is indeed a situation to give the Congress concern.

And for the Committee on Armed Services, charged by the House of Representatives with advice and leadership on questions of national defense, this situation is doubly troublesome.

Petroleum and its products represented well over 50 percent, in fact, about 60 percent of all tonnage shipped overseas in World War II.

Now, that is an amazing statement, but it is accurate. That includes the tonnage not only of the men, their clothing and their food, but all their equipment, their tanks and guns and ammunition. [Continues reading:]

Of the total tonnage of all shipping to Europe in World War II, 60 percent of it was petroleum or petroleum products. I recall riding with Senator Saltonstall, with Gen. Alexander Patch from his headquarters at Swabischgemund through Heidelberg down through Augsburg to Munich, 160 miles, with vehicles of all kinds—big tanks, medium tanks, small tanks, caterpillars, bulldozers, trucks of all sizes, scout cars, jeeps, transport trucks.

I remarked, I recall, to the general, "How in the name of heaven did you ever get enough oil to drive all of this mechanized equipment?"

He said, "Well, Mr. Short, it staggers the imagination of anyone," and he says, "These bombers flying over our heads are using much more juice than this ground equipment."

I said, "Yes, and you are just heading the Seventh Army down here. When I think of Georgie Patton up there with the Third Army, and Hodges with the First, and Simpson of the Ninth—and this is just the European theater—when I think of the Pacific war, it simply staggers the imagination." You wonder how in the name of heaven we ever got enough oil to drive all that mechanized equipment.

This petroleum, it fueled our tremendous air striking forces, our thousands of tanks, our great truck convoys, our mighty fleet. It permitted, in short, our fueling a modern mechanized war. It was definitely an imperative for victory.

And in the future, should another war come, regardless of our efforts to avoid it, petroleum again is certain to have a still greater military and naval significance. The volume required will not be enormous, it will be stupendous, and the vast military demands will be superimposed on a greatly enlarged civilian demand. The national defense is therefore inextricably profoundly involved in this great riddle, the great enigma of petroleum today. And this our committee proposes to probe into as far as our time will permit, to insure to the committee's satisfaction that our national security needs for petroleum can be adequately met now and in the years ahead.

The question properly developed would of course consume months of daily hearings, for it covers not only the entire oil industry of America and the world but also, among a myriad of other items, the steel industry, foreign affairs, the transportation industry and even the great coal industry of this Nation.

The committee cannot go over all these things in the hearing. Time is simply unavailable. So we determined upon the alternative of proceeding only on selected items and postponing further explorations to more propitious circumstances.

Then we began with Secretary Forrestal and the other witnesses in those hearings.

Now, then, Mr. Chairman and members of the committee, I have been, as you stated in your opening remarks, tremendously interested in this problem. And I have had a continuing interest that has not faltered or weakened, but has rather increased with time and it has given me a great deal of concern.

The first thousand years of our Christian history was written on the Mediterranean, the next thousand on the Atlantic, and perhaps the next thousand will be written on the Pacific.

I remember when MacArthur was fighting on a shoestring out there. But we now know that thieves and robbers can come into your house by the back door. And perhaps the great threat to this Nation today is from Asia; or at least the hottest spot right now is in southeast Asia, Indochina and Formosa.

And if we become involved in another global conflict, my concern is that we have an adequate and ready supply of petroleum on our west coast, to supply not only our great Air Force but our Pacific fleet in that big pond. And it is a pretty big pond out there.

Those of us who have sailed over it and flown over it realize that, I think.

So I have talked about this matter of an adequate supply of petroleum on the west coast not only with Admiral Radford on different occasions but other high military men in all branches of our services.

I have discussed it with the Secretary of Defense, Mr. Wilson, on an occasion or two. And at least I imagine I have discussed it a half dozen times with the Director of War Mobilization, Dr. Flemming.

And on January 29 of this year, January 29, 1955—I felt constrained and impelled to write Dr. Flemming a letter on this particular problem, and I want to take the time to read that, Mr. Chairman, and then I am through.

It won't take me long.

(The letter is as follows:)

JANUARY 29, 1955.

Hon. ARTHUR S. FLEMMING,
Director, Office of Defense Mobilization,
Washington, D. C.

MY DEAR DR. FLEMMING: I am reluctant but feel constrained, only out of helpful intent, to tell you that in my opinion you have been misinformed and ill advised concerning the construction of an oil pipeline from west Texas to the Pacific coast.

Mr. SHORT. And following this letter, I want to ask permission of this committee to include a breakdown and documentary evidence from official Government documents themselves and men in high authority both in the Government and in industry to support the points that I make in this letter.

Mr. Chairman, without objection, I would like for this to follow the letter. [Resuming:]

In your review of this matter I wish to state what I believe to be certain incontrovertible facts:

1. It is evident that at the present time California is not producing an adequate supply of oil to meet its own peacetime domestic needs. And it is highly doubtful that if all the oil resources in California were tapped to capacity that an adequate supply could be furnished for any appreciable length of time.

It must be admitted as statistics will show that for a considerable time more than 50,000 barrels of crude oil have been imported daily to California. If refined oil products are added to the crude imported you would have many additional thousands of barrels of petroleum products.

Any intelligent and fairminded person knows that in an all-out war we would need much, much more oil on the west coast than at the present time.

It also cannot be denied that the nearest, quickest, and most adequate supply to meet both our peacetime and wartime needs on the west coast are the rich oil fields in west Texas.

2. It has been charged that there is not now sufficient refining capacity in California to take care of additional oil. This charge, it seems to me, will not hold water, because during World War II such greater supplies of oil were refined in California, and at the present time they have a refining capacity of 1,300,000 barrels daily.

Also bear in mind that the present refineries are operating considerably below their refining capacity. Furthermore, if Texas oil could be brought to the west coast, the refineries would certainly be built.

Refineries would follow construction of the pipeline just as industries follow the power that is generated by hydroelectrict dams.

3. Another false allegation, in my opinion, is that Texas oil could not be refined in California, or used because of the grade and character of Texas oil. This charge seems a bit silly since much Texas oil was used in World War II, and the reports of our Government's own agencies show that Texas oil has a lower content of sulfur than California oil, and that high octane can be produced from California, and Near East oil now imported, only by mixing high-grade Texas gasoline with it.

I am not an engineer or a chemist, but some of the experts have told me that high octane can be developed from Texas oil, and we all know that our new modern jets use kerosene—not so far different from the old-fashioned coal oil we burned in our lamps at home not too many years ago.

4. Transportation of oil by pipeline from Texas to California would cost somewhere between 50 and 60 cents a barrel, whereas the transportation from the gulf coast by tanker through the Panama Canal to California is three times as much. And if the canal should be bombed during a conflict the source of supply from the gulf coast would practically be cut off.

We can't even get a carrier, a supercarrier of the *Forrestal* type, through the canal. [Resuming reading:]

The lack of adequate railroad transportation from west Texas to California makes the transportation of oil even more expensive than by tanker—and tank cars rolling above the ground would be vulnerable to attack.

Because transportation by pipeline would be cheaper, safer, and quicker, this is an irrefutable argument, which even the monopolists cannot answer.

5. Experience in World War II proved how valuable and essential both the Big and Little Inch pipelines were, that ran to our east coast. Those lines were very important, if not indispensable, to our victory in that conflict. The pipelines soon paid for themselves and the Government sold them at a profit.

With the mounting tensions in the Pacific, and in the light of all the facts confronting us at this critical time, I believe that the construction of a pipeline from west Texas to the Pacific coast is long overdue, and is not only necessary but essential for our national defense.

I might parenthetically state that under the previous administration a certificate of necessity was granted for the building of a pipeline from west Texas to the Pacific coast, but a certificate of essentiality has not been granted. That is the thing I would like to see done. And if it had been granted by the Director of War Mobilization, this hearing or study or survey would not be necessary. [Continues reading:]

In this air age we must have planes, trained pilots, and skilled mechanics to operate them, and bases from which they can take off. But without an adequate supply of oil to fuel and drive these planes, neither the planes, nor the men, nor the fields from which they fly will do us any good.

Again I want to state parenthetically it would be exceedingly stupid of us and we would commit an act of supreme folly to spend billions of dollars—seven million it cost to build one B–52 bomber—wouldn't it be supreme folly for us to spend billions of dollars building up great air fleets of planes and spending more billions of dollars to train pilots and still more billions of dollars to construct airfields, with these long runways to accommodate the modern bomber and the fast jet, unless we can be assured that we will have enough juice or fuel that those planes consume at such an enormous rate today? [Continues reading:]

An adequate supply of petroleum and petroleum products is necessary for our peacetime needs, and is absolutely indispensable to this Nation in time of war.

Therefore, I trust that without any further study or congressional hearing not only a certificate of necessity, which already has been issued, but that a certificate of essentiality can be granted without further delay, for the construction of a pipeline from west Texas to the Pacific coast. This could well mean the difference between defeat or victory in another global conflict.

My only interest—

and I want this committee and the public to know—

my only interest and concern is for the security of our Nation and the survival of our people.

Sincerely yours,

DEWEY SHORT,
Member of Congress.

Now, that gives, I think, a pretty good background and a picture of our problem.

I want to rather repeat something that the chairman said, but I think he said it more clearly and forcefully than I can. We are not on any witch hunt here. This is no inquisition. This is an objective study, a survey. We are concerned only with the defense of this Nation.

I feel that this pipeline is long overdue. I would like to see it built by private capital. If it can't be, then perhaps private capital and the Government working together. But this committee is charged with the defense of this Nation. While we have been appropriating billions for carriers and airplanes and construction of airfields and on training programs and building up a Reserve now, it would be foolish if we overlooked this very vital link in our whole chain of defense, of seeing that we have an adequate supply of petroleum, not only on the east coast, but also on the west coast where the greatest danger confronts us at this particular hour.

I want to thank you very much, Mr. Chairman, and members of this committee, for being patient in indulging me to make these remarks.

Mr. HÉBERT. Thank you, Mr. Short.

Now, I think if I may suggest this: The document which you want filed, I think it would be of interest to the committee if you could summarize it, so the committee will know what is in it.

I understand that is the document to support——

Mr. SHORT. To support and substantiate——

Mr. HÉBERT. And that gives the figures?

Mr. SHORT. Yes.

Mr. HÉBERT. I think it is very important that the committee be made cognizant of those figures at this time.

Mr. SHORT. That is fine.

Mr. RIVERS. Mr. Chairman, before he does that——

Mr. HÉBERT. Mr. Rivers?

Mr. RIVERS. Could I inquire, Mr. Short, if you ever heard from Dr. Flemming on that very classic request you made of him?

Mr. SHORT. Yes. Dr. Flemming came up to my office and read me a statement or a report which a committee of three that he had set up had prepared for him and which had some good things in it, but some other things far from good.

Mr. HÉBERT. Do you recall the names of the members of that particular committee to which you refer, Mr. Short?

Mr. SHORT. One man out of Denver.

Who are the members of that Commission?

Mr. HÉBERT. Palmer Hoyt?

Mr. SHORT. Palmer Hoyt was one. I forget the other two members.

Mr. HÉBERT. We will get it from Dr. Flemming.

Mr. SHORT. Yes; he will give you that.

Mr. RIVERS. Well, now, I had in mind: You said the certificate of convenience and necessity had been issued by the previous administration, but that this other certificate——

Mr. HÉBERT. Of essentiality.

Mr. RIVERS. Essentiality——

Mr. SHORT. Has not been granted. Of course, there has been a shift in personnel, as the gentleman well knows, not only at the higher echelons, but some of the subordinate officers.

Mr. RIVERS. Yes.

Mr. SHORT. Even a change in the setup of the old petroleum agency.

Mr. HÉBERT. Mr. Short, for the benefit of the committee, will you explain the difference between a certificate of necessity and a certificate of essentiality?

Mr. SHORT. I have never been able to understand it myself. [Laughter.]

Mr. RIVERS. I think those words change with the administration. [Laughter.]

Mr. SHORT. Well, certainly they are subject to flexible meanings or interpretation. I really do not know. You have to have the second one in order to make the first effective.

Mr. HÉBERT. In other words—well, the Government participation is different in the two?

Mr. SHORT. I don't know.

Mr. COURTNEY. Mr. Chairman, maybe we could clear that up.

Mr. HÉBERT. I think we should, because that is the key to this whole inquiry.

Mr. RIVERS. Yes, sir; that is very, very important to me.

I am right now sufficiently confused. But you can go ahead if you want to give us the facts.

Mr. COURTNEY. The certificate or the finding to which I believe Mr. Short is referring would be founded on an Executive Order of the President, No. 10469, which was issued by the President on September 26, 1953.

Mr. HÉBERT. Are you addressing yourself to a specific certificate of necessity?

Mr. COURTNEY. No. I am addressing myself to the source from which a certificate would flow by whatever name called.

Mr. RIVERS. That is right.

Mr. COURTNEY. The authority.

Mr. RIVERS. Yes.

Mr. COURTNEY. That was issued September 29, 1953. It is an invocation by the President of the powers granted as the order says, in the Defense Production Act of 1950 as amended.

Now, without detailing the whole source material—it is all contained very fully in the order—section 310 says:

> The Secretary of the Treasury, hereafter in this section referred to as the Secretary, is hereby authorized to make loans (including participations in, or guaranties of loans) to private business enterprises, including research corporations not organized for profit, for the expansion of capacity, the development of technological processes, and the production of essential materials, including the

exploration, development, and mining of strategic and critical metals and minerals, exclusive of such expansion, development, and production in foreign countries, as authorized by and subject to section 302 of the Defense Production Act of 1950 as amended.

The functions assigned to the Secretary by this section include the administration and servicing of all loans (including participation in or guaranties of loans) made by the Reconstruction Finance Corporation prior to September 29, 1943, pursuant to said section 302.

Loans under section 310 (a) hereof, (1), shall be made upon such terms and conditions as the Secretary shall determine, (2), shall be made only after the Secretary has determined in each instance that financial assistance is not available on reasonable terms from private sources or from other Government sources, and (3), shall be made only upon certificate of essentiality of the loan, which certificate shall be made by the Director of the Office of Defense Mobilization.

Applications for loans under section 310 (a) hereof shall be received from applicants by the Secretary or by such agencies of the Government as the Secretary shall designate for this purpose.

Now, that is the Executive order which confers the title of the certificate of essentiality on an application in those circumstances.

Mr. HÉBERT. In other words, as I understand it, as I understand the order, the certificate of essentiality means Government participation and support?

Mr. COURTNEY. It means either Government loan or guaranty.

Mr. HÉBERT. Or guaranty. Whereas a certificate of necessity merely provides for the construction of a line and the priority of essential materiel and the rapid amortization for tax purposes.

Mr. SHORT. But, Mr. Chairman, I am no banker or financier. I am not so interested in the finances of the thing. What I am interested in is that we have an adequate supply of petroleum on that west coast in case of another global conflict. I don't care who builds the line or how it is built, but just as long as we get that pipeline. We want it out there.

Mr. HÉBERT. I understand that, Mr. Short.

Mr. SHORT. And I think that is the thing for us to determine.

Mr. HÉBERT. Well, I understand that. But I just wanted to get it on the record there.

Mr. SHORT. Yes.

Mr. HÉBERT. Because I understand you have said in your statement that a certificate of necessity has already been issued.

Mr. SHORT. It has been.

Mr. HÉBERT. And now exists?

Mr. SHORT. Yes.

Mr. HÉBERT. Now to whom was that issued, do you know, or would Dr. Flemming be the one to know?

Mr. SHORT. He will give that information.

Mr. HÉBERT. However, the fact remains that a certificate of necessity does exist.

Mr. SHORT. Yes.

Mr. HÉBERT. But that only provides for construction by private capital, of necessity. The only good a certificate of necessity really is for the acquisition and priority rights for essential material and for the rapid amortization of the money involved by private capital.

(Mr. Short nods.)

Mr. HÉBERT. Now, since the certificate of necessity does exist and has been issued and no pipeline has been constructed, then it is encumbent upon this committee, and properly so——

Mr. SHORT. To see that one is.

Mr. HÉBERT. To see that one is, if one is needed, and naturally if one is needed I think it must be with Government help since it is indicated that private capital can't or is not interested at this time, is that right?

Mr. SHORT. I think the chairman stated it very clearly. I think that is it. And it is up to us to determine whether or not we have an adequate supply out on the west coast at the present time or would have in case of an emergency. That is the objective study we want to make.

Mr. HÉBERT. That is correct. It is simply a case of mathematics.

Mr. SHORT. That is right.

The chairman has asked me to give you a breakdown of the figures.

Mr. HÉBERT. I would like a breakdown of the figures for the benefit of the committee.

Mr. SHORT. Now the first—this is—

Documentary support for statements of Representative Dewey Short in a letter to Mr. Arthur H. Flemming, Office of Defense Mobilization, dated January 29, 1955.

1. Mr. Short's statement of facts (first paragraph under point No. 1, p. 1, of Mr. Short's letter):

It is evident that at the present time California is not producing an adequate supply of oil to meet its own peacetime domestic needs. And it is highly doubtful that if all the oil resources in California were tapped to capacity that an adequate supply could be furnished for any appreciable length of time.

Now what are the facts?

(*a*) Present demand for petroleum products from district 5 for the year 1954 is 1,066,998 barrels daily.

That is supported——

All demand figures taken from the Bureau of Mines district 5 petroleum demand reports Nos. 61 to 71, inclusive.

Mr. HÉBERT. What is district 5?

Mr. SHORT. That takes in California——

Mr. HESS. Washington and Oregon.

Mr. SHORT. No. There are about 4 or 5.

Mr. HÉBERT. Let's designate them so we will know what we are talking about.

Mr. SHORT. There are 4 or 5.

Mr. HÉBERT. Western States.

Mr. SHORT. Pacific coast States.

Mr. HÉBERT. And that production is 1 million——

Mr. SHORT. 1,066,998 barrels daily.

These figures are from the Bureau of Mines: 1,023,410 barrels daily. Local demand—that is the local demand for use in district 5.

Shipments from district 5 to Hawaii and Alaska: 36,216 barrels. And shipment from district 5 to other States of the United States, 7,372 barrels daily. Which gives us a total of 1,066,998 barrels.

Now the present crude-oil production in California is only 975,854 barrels daily with a net of demand over supply of 91,141 barrels daily.

The demands for this region are 1,066,998 barrels daily. The present crude-oil production in California is only 975,854 barrels daily. Which shows a net of demand over supply of more than 91,000 barrels a day.

Mr. HÉBERT. Do you know whether the supply is being met with outside oil, being shipped to California?

Mr. SHORT. It is being imported.

Mr. HÉBERT. It is being imported?

Mr. SHORT. From the Near East and from South America.

The total California crude production for year 1954 was 376,187,000 barrels according to Oil and Gas Journal of January 31, 1955, at page 149 (as follows):

Estimated proved recoverable reserves of crude oil in the United States

[Thousands of barrels]

	Proved reserves, Jan. 1, 1954	1954 discoveries	1954 extensions and revisions	1954 production	Proved reserves		
					As of Jan. 1, 1955	Year's change	Percent of United States
Alabama	17,000	0	586	1,586	16,000	−1,000	0.05
Arkansas	359,000	8,000	35,682	28,682	374,000	15,000	1.2
California total	4,228,000	43,000	390,187	356,187	4,305,000	77,000	14.0
Coastal	878,000	10,000	136,779	92,779	932,000	54,000	3.0
Los Angeles	1,239,000	5,000	130,444	116,444	1,258,000	19,000	4.1
San Joaquin	2,111,000	28,000	122,964	146,964	2,115,000	4,000	6.9
Colorado	320,000	34,000	98,751	45,751	407,000	87,000	1.3
Illinois	682,000	28,000	46,231	66,231	690,000	8,000	2.2
Indiana	63,000	1,000	7,673	10,673	61,000	−2,000	.2
Kansas	942,000	28,000	92,039	118,039	944,000	2,000	3.1
Kentucky	82,000	10,000	34,742	13,742	113,000	31,000	.4
Louisiana total	2,910,000	50,000	312,681	236,681	3,036,000	126,000	9.9
North	515,000	10,000	80,351	47,351	558,000	43,000	1.8
South	2,395,000	40,000	232,330	189,330	2,478,000	83,000	8.1
Michigan	61,000	2,000	13,985	11,985	65,000	4,000	.2
Mississippi	351,000	9,000	38,045	34,045	364,000	13,000	1.1
Montana	209,000	2,000	40,177	14,177	237,000	28,000	.8
Nebraska	26,000	6,000	9,678	7,678	34,000	8,000	.1
New Mexico	815,000	13,000	135,259	74,259	889,000	74,000	2.9
New York	50,000	0	23,240	3,240	70,000	20,000	.2
North Dakota	129,000	500	110,347	5,847	234,000	105,000	.9
Ohio	32,000	150	4,050	4,200	32,000	0	.1
Oklahoma	1,798,000	38,000	286,772	183,772	1,939,000	141,000	6.3
Pennsylvania	111,000	0	40,120	9,120	142,000	31,000	.4
Texas total	15,100,000	134,000	805,914	918,914	15,121,000	21,000	49.2
East	2,900,000	2,000	30,158	136,158	2,796,000	−104,000	9.1
Gulf coast	3,310,000	22,000	228,114	190,114	3,370,000	60,000	11.0
North	1,100,000	10,000	185,659	110,659	1,185,000	85,000	3.8
Panhandle	375,000	10,000	60,455	27,455	418,000	43,000	1.4
Southwest	1,320,000	10,000	90,915	94,915	1,326,000	6,000	4.3
West	6,095,000	80,000	210,613	359,613	6,026,000	−69,000	19.6
Utah	38,000	200	722	1,922	37,000	−1,000	.12
West Virginia	37,000	0	1,887	2,887	36,000	−1,000	.12
Wyoming	1,279,000	12,000	384,842	91,842	1,584,000	305,000	5.2
Others [1]	4,000	500	1,234	734	5,000	1,000	.01
Total, United States	29,643,000	419,350	2,914,844	2,242,194	30,735,000	1,092,000	100.00

[1] Florida, Missouri, South Dakota, Tennessee, Virginia, Nevada, Arizona.

Estimated proved recoverable reserves of natural-gas liquids in the United States, includes condensate, natural gasoline, and liquefied petroleum gases

[Thousands of barrels]

	Proved reserves Jan. 1, 1954	1954 discoveries	1954 extensions and revisions	1954 production	Proved reserves		
					As of Jan. 1, 1955	Year's change	Percent of United States
Arkansas	50,000	175	2,100	275	52,000	2,000	1.0
California	325,000	2,000	23,900	30,900	320,000	−5,000	6.0
Colorado	11,000	300	500	800	11,000	0	0.2
Illinois	17,000	50	750	3,800	14,000	−3,000	0.3
Kansas	177,000	1,000	6,000	5,000	179,000	2,000	3.4
Kentucky	8,000	120	880	2,000	7,000	−1,000	0.1
Louisiana	650,000	30,000	89,700	47,700	722,000	72,000	13.6
Mississippi	55,000	140	−2,780	2,360	50,000	−5,000	0.9
Montana	3,000	10	190	200	3,000	0	0.1
Nebraska	3,000	50	480	230	3,300	300	0.1
New Mexico	273,000	6,665	29,700	11,365	298,000	25,000	5.6
Oklahoma	301,000	5,600	31,200	20,800	317,000	16,000	6.0
Texas	3,036,000	46,000	319,800	153,800	3,248,000	212,000	61.1
West Virginia	28,000	1,000	8,200	7,200	30,000	2,000	0.5
Wyoming	51,000	690	5,500	2,190	55,000	4,000	1.0
Others	5,000	56	700	50	5,700	700	0.1
Total United States	4,993,000	93,850	516,820	288,670	5,315,000	322,000	100.0

Substantially same figures will come from Bureau of Mines Mineral Survey reports.

Production for California as a State is for practical purposes the same as district 5, for not until 1954 was there any production in the other 4 States of district 5, i. e., Washington, Oregon, Nevada, and Arizona—there is now 1 well in each of the latter 2 States. (See p. 150, Oil and Gas Journal of January 31, 1955, as follows):

Giant fields[1] versus all fields—Crude, condensate, and cycled products

[Millions of barrels]

State	1954 production				Estimated ultimate[2]			Remaining reserves		
	Number giants	All fields	Giant fields	Giants percent	All fields	Giant fields	Giants percent	All fields	Giant fields	Giants percent
Texas	65	936.93	497.59	53.1	33,260	21,566	64.8	15,500	10,371	66.9
California	38	358.30	272.13	76.0	14,455	12,040	83.3	4,401	3,343	76.0
Oklahoma	22	183.77	75.67	41.2	9,019	4,722	52.4	2,018	1,011	50.1
Louisiana	[3] 15	252.82	[3] 67.48	26.7	6,289	[3] 2,254	35.9	3,751	[3] 932	24.9
Kansas	6	118.04	27.09	22.9	3,514	1,073	30.4	944	311	32.9
New Mexico	4	74.89	26.85	35.9	1,700	808	47.5	961	309	32.1
Illinois	5	66.23	26.12	39.4	2,279	1,354	59.4	690	356	51.6
Wyoming	[4] 5	92.14	[4] 23.37	25.4	2,336	[4] 1,030	45.4	1,584	[4] 395	24.9
Colorado	1	45.75	22.47	49.1	645	352	54.6	418	187	44.7
New York-Pennsylvania	2	12.36	10.25	82.9	1,509	928	61.5	212	209	98.6
Mississippi	3	35.31	9.96	28.2	820	386	47.1	394	165	41.9
Arkansas	3	28.87	9.64	33.4	1,249	705	56.4	394	109	27.6
Montana	1	14.18	2.68	18.9	407	113	27.8	237	35	15.0
North Dakota	1	5.85	2.52	43.1	276	146	52.9	263	139	52.9
Other States	0	55.10	0	0	2,500	0	0	442	0	0
Total United States	171	2,281.54	1,073,82	47.1	80,278	47,507	59.2	32,209	17,872	55.5

[1] Fields with estimated recovery of 100 million barrels or more.
[2] Accumulated production to Jan. 1, 1955, plus estimated proved reserves.
[3] Includes all Rodessa field.
[4] Includes all of Elk Basin field.

Now those are facts. Now what is the opinion?

David E. Faville, of Stanford University, had this to say:

Yet California's oil production is not now sufficient to accommodate the daily needs of our greatly augmented population. We have become an importer of oil on a multi-million-dollar scale.

Until quite recently, California produced more oil than it used. Now, however, with our consumption even greater than the peak year of World War II, it has been bringing in oil for the past 2 or 3 years to satisfy our requirements, and it is expected that this will continue.

In fact we are importing about 67,000 barrels a day.

2. Mr. Short's statement (second paragraph under point No. 1, p. 1, of Mr. Short's letter):

"It must be admitted as statistics will show that for a considerable time more than 50,000 barrels of crude oil have been imported daily to California. If refined oil products are added to the crude imported you would have many additional thousands of barrels of petroleum products."

Now what are the facts?

(*a*) 1954 imports of foreign crude into district 5 amounted to 51,348 barrels daily.

The first 4 months of 1955 show this now to be 73,966 barrels daily. That is how rapidly the consumption is taking place out there, due to the influx of so many people.

Missouri lost two Congressmen after the last census. California gained seven. We know what demands are made out there.

(*b*) Imports into district 5 of products, natural gas, gasoline, and lube stock, from gulf coast only, not including any other area, amounted to 12,386 barrels a day.

Quotation from an address of David E. Faville, professor of marketing, Graduate School of Business, Stanford University, before the Rotary Club of San Francisco, December 8, 1953.

Complete figures for year 1954 show 51,348 barrels a day. (This figure is arithmetic average of monthly figure shown on table 16 of Bureau of Mines Mineral Industry Surveys Monthly Petroleum Statements Nos. 375 to 386, inclusive, excepting No. 385, which is a cumulative statement.)

The figure I gave up here is the average for the first 6 months.

3. The third statement I made:

Any intelligent and fairminded person knows that in an all-out war we would need much more oil on the west coast than at the present time.

Of course, Maj. Gen. S. D. Sturgis, Jr., Chief of Engineers of the United States Army, had this to say in an address before the construction division of the American Society of Civil Engineers in New York City on October 21, 1954—last October.

He says:

But the petroleum needs of the last war are indeed only a fractional part of those we foresee should we become engaged in another world conflict.

Commodore W. G. Greenman, United States Navy—we are all familiar with Commodore Greenman of the United States Navy—said:

For future emergencies involving the Pacific area we have studied the possibilities of putting in a pipeline comparable to the Big Inch, but then we find even with the railroads and the proposed pipeline operating at maximum capacity, we would still be short of oil sufficient to meet war operations in the Pacific on a scale comparable to those of the last war. Consequently we must develop every source of oil west of the Rocky Mountains.

Commodore Greenman said—he was director of the naval petroleum reserves and appeared often before our committees. And he made

that statement at hearings on the Navy Department appropriation bill February 28, 1946, at page 1735.

Lt. Comdr. R. J. Bradley, of the United States Naval Reserve, at hearing on the Navy Department appropriation bill in February of 1946, at page 1729, also stated:

Therefore, if we look forward to a future of oil on the west coast, where in time of emergency there simply would not be enough, not only to supply the normal requirements of the area, but where there would not be enough to fight a war at all, we would have nothing to contribute. We would have to deny the civilians everything, if we are going to utilize it fully and, of course, you can't do that because everything stops.

And if the workers in our war plants out in those great airplane industries and the shipyards do not have gas to drive their cars to work—many of them live 20, 25 miles from where they work—our whole war effort breaks down.

4. This is the fourth statement I made:

It also cannot be denied that the nearest, quickest, and most adequate supply to meet both our peacetime and wartime needs on the west coast are rich oilfields in west Texas.

5. Now what are the facts?

a. By pipeline, rail, or truck it is about 1,000 miles only from the west Texas-New Mexico oilfields to the Los Angeles refining area. From Venezuela by tanker approximately 3,500 miles; from Saudi Arabia approximately 11,500 miles; from Alberta to Vancouver by pipeline some 850 plus 1,300 miles by tanker from Vancouver to Los Angeles.

You can see any road atlas or railroad timetable to substantiate those figures.

(*b*) Whether by rail, tanker, or pipeline, west Texas fields are quickest—no authority needed.

For that, it is an obvious fact.

(*c*) Adequacy of supply:

(1) As of January 1, 1955, west Texas-New Mexico had 22.5 percent of total United States crude reserves. (See Oil and Gas Journal of January 31, 1955, page 149, copy attached.)

(2) Both west Texas and New Mexico are currently producing much less than their MER—i. e., less than they could and still remove the oil in the most efficient manner.

See letter from the Texas Railroad Commission to the West Coast Pipeline on the 13th of January 1955, and a letter from the New Mexico Conservation Commission to the West Coast Pipeline dated January 13, 1955.

(3) No other supply is under United States control at all times.

Mr. Short's statement of fact:

"It has been charged that there is not now sufficient refining capacity in California to take care of additional oil. This charge, it seems to me, will not hold water, because during World War II much greater supplies of oil were refined in California, and at the present time they have a refining capacity of 1,300,000 barrels daily. Also bear in mind that the present refineries are operating considerably below their refining capacity. Furthermore, if Texas oil could be brought to the west coast, the refineries would certainly be built.

"Refineries would follow construction of the pipeline just as industries follow the power that is generated by hydroelectric dams."

Now what are the facts?

(*a*) District 5 refinery capacity on January 1, 1955, was 1,342,900 barrels daily.

That is found: The Bureau of Mines, Petroleum Refineries, and so forth in District 5, January 1, 1954. Page 1 (January 1, 1954,

capacity plus additional capacity of 100,000 barrels daily constructed in 1954.)

(*b*) All of the total capacity mentioned in subparagraph *a* above is located in California except for two existing refineries in the Northwest and the new General Petroleum, Ferndale, Wash., refinery. These 3 have a total of 60,000 barrels daily. (Bureau of Mines, Petroleum Refineries in District 5, Jan. 1, 1954, p. 1.)

(*c*) Subtracting current district 5 crude production of 975,854 barrels daily from district 5 refining capacity of 1,327,400 barrels daily leaves total excess refinery capacity in district 5 on January 1, 1955, of 351,546 barrels daily.

The Bureau of Mines Petroleum Refineries in District 5, January 1, 1954, page 1. January 1, 1954, capacity plus additional capacity of 100,000 barrels daily constructed in 1954 will give you those figures. They have a capacity of 351,546 barrels daily that they are not using.

(*d*) Bulk of California refineries are located in Los Angeles area.

That we will see when we go out, and one bomb would knock the whole business out. You would not have anything left.

(*e*) Use of west Texas crudes will increase capacity of California refineries of gasoline, naphtha, and kerosene because of the high gravity crudes from Texas. Many California crudes are heavy with large percentages of residual fuels. The exact increase in the California refinery yields as a result of this cannot be ascertained but there should be no argument on the principle that the difference in the crudes is shown by the comparative refinery yields of the Texas inland and California districts in table 8 of the Bureau of Mines Mineral Industries Surveys Monthly Petroleum Statements Nos. 375 to 382, inclusive.

6. Mr. Short's statement of fact:

Another false allegation, in my opinion, is that Texas oil could not be refined in California, or used because of the grade and character of Texas oil. This charge seems a bit silly since much Texas oil was used in World War II, and the reports of our Government's own agencies show that Texas oil has a lower content of sulfur than California oil, and that high octane can be produced from California, and Near East oil now imported, only by mixing high grade Texas gasoline with it.

I am not an engineer or a chemist—but some of the experts have told me that high octane can be developed from Texas oil—and we all know that our new modern jets use kerosene—not so far different from the old-fashioned coal oil we burned in our lamps at home.

Facts:

(*a*) At least 44 percent of all current production of crude in west Texas is "sweet crude"—that is, of low sulfur content. The Texas Railroad Commission, in a report prepared for PAD—Petroleum Administration for Defense—January 1, 1953, estimated 44.3 percent of the west Texas crude to be sweet and 55.7 percent sour.

(*b*) In New Mexico (part of the west Texas field) 40 percent of current production is classified as "sweet."

See letter from the New Mexico Oil Conservation Commission to the West Coast Pipeline Co. dated January 3, 1955.

(*c*) The average of California crudes are higher in sulfur content than west Texas crudes, as follows:

West Texas crude, average percentage of sulfur content, 54 percent; California crude, average percentage of sulfur content, 1.01 percent.

Bureau of Mines report of Investigations No. 4959 (March 1953), Analyses of Crude Oils From Some West Texas Fields, table 3, pages 4 and 4A.

This document has used 100 samples in the west Texas field and the sulfur and API gravity averages were arrived at on a straight arithmetical basis.

Bureau of Mines report of Investigations No. 4289, Analyses of Crude Oils From 283 Important Oil Fields in the United States, table 1, pages 3 and 4.

The foregoing table gives samples of 57 California fields and the sulfur and gravity averages were arrived at by straight arithmetical averages on such fields.

While this particular document also covers the State of Texas, it does not have the west Texas field separated from the rest of Texas oil and therefore could not be used on a comparative basis.

This is the latest date on California that we have been able to find from the Bureau of Mines.

Now, 7:

Transportation of oil by pipeline from Texas to California would cost somewhere between 50 and 60 cents a barrel, whereas the transportation from the gulf coast by tanker through the Panama Canal to the State of California is 3 times as much, and if the canal should be bombed during a conflict the source of supply from the gulf coast would practically be cut off.

The lack of adequate railroad transportation from west Texas to California makes the transportation of oil even more expensive than by tanker—and tank cars rolling above the ground would be vulnerable to attack.

Mr. RIVERS. Will the gentleman yield there?

Mr. SHORT. Yes.

Mr. HÉBERT. Yes.

Mr. RIVERS. You don't transport crude oil by tank cars for long hauls. It just can't be done.

Mr. SHORT. That is right.

Mr. RIVERS. That is a matter—everybody knows that.

Mr. SHORT. The facts are the transportation cost of crude from west Texas to Los Angeles refinery area by railroad——

Mr. RIVERS. All right. You can't economically do it.

Mr. SHORT. Wait a minute. Yes. But the transportation cost of crude from west Texas to Los Angeles refinery by railroad is $4.29 a barrel.

Mr. RIVERS. Of course, you can't do it. Anybody knows that.

Mr. SHORT (reading):

(*b*) Rate per barrel by pipeline to gulf coast and by tanker from gulf coast to Los Angeles would perhaps be about one-third.

Mr. RIVERS. Why certainly. So you can forget the railroads. You can't do it.

Mr. SHORT. The pipeline transportation, west Texas to Los Angeles, 50 cents per barrel.

Mr. RIVERS. That is right.

Mr. SHORT. Fifty cents per barrel, not $4.29, but 50 cents. How long would it take to pay for a line?

Mr. RIVERS. Liquidates itself overnight.

Mr. SHORT. With that difference.

(*d*) Limited railroad facilities—and bear in mind few of our own people that have traveled back and and forth across this country realize this. Railroad facilities are very limited from west Texas to the west coast. The small capacity of western railroads, only two single-track lines from west Texas to Los Angeles, were such that in World War II the movements of crude from Texas to the west coast were five times as difficult as moving the same amount to the east coast.

And that is the history of petroleum for war—well to substantiate these facts.

In addition World War II showed that the railroad transportation bogged down in the face of floods, blizzards, snow, and terminal congestion, and with the utmost of organization the railroads were never able to deliver more than 35,922 barrels a day of crude to the district 5 refineries in World War II.

Now what an awful pounding our railroads took and how—you only have Southern Pacific, a direct line from west Texas to California.

Of course the Santa Fe winds up through New Mexico and out across Arizona and finally gets there.

It finally gets there.

Mr. RIVERS. The Toonerville route.

Mr. SHORT. Now point 8.

Experience in World War II proved how valutable and essential both the Big and Little Inch pipelines were, that ran to our east coast. Those lines were very important, if not indispensable to our victory in that conflict. The pipelines soon paid for themselves and the Government sold them at a profit.

Importance of Big and Little Inch pipelines:

Big Inch, the largest-diameter pipeline in the world, and Little Big Inch, the Nation's longest, stood and still stand for oil's most resounding victory over its most devastating foe—the shortage of transportation to the east coast. Without them, and all of the other elements in the PAW-oil industry pipeline program, even despite the tremendous accomplishments of all other transportation facilities—

and I don't want to minimize the remarkable and magnificent contribution our railroads made, but not enough oil would or could have been moved in time for victory.

The data on the profitable nature of pipelines and sale of pipelines at a profit are not yet available.

But those of you gentlemen who were with me in Iran and Teheran and then down to Abadan and Bahrein in Saudi Arabia will recall they were constructing a 1,050 thirty-inch pipeline at that time across the north end of the Arabian Peninsula from Daran to Hiva on the Mediterranean.

The length of that pipeline—of course it has been finished. It is on top of the ground. They have guards along the desert there, but that pipeline is 1,050 miles long, practically the same length that a pipeline would be from west Texas to the Los Angeles area.

Mr. HÉBERT. Any——

Mr. SHORT. It is hard for you to follow all these figures as I gave it to you.

But if you can see it in the record, substantiation is given to each charge made.

Mr. HÉBERT. It has been very helpful for you to have given the committee these data so we will know exactly in what way we can approach the problem ahead of us.

Thank you very much, Mr. Short.

Mr. RIVERS. Mr. Chairman.

Mr. HÉBERT. Mr. Rivers.

Mr. RIVERS. Mr. Chairman, I think with that classic, also dramatic statement, we could take a vote now. Our colleague has more information in his head than most of us have in these reports. But I would just like to say a word or two since I have been involved in this thing. I haven't been in Congress as long as my distinguished colleague, but I have been here long enough to know better. [Laughter.]

In 1943 this committee to which you referred, the then Naval Affairs Committee, of which my distinguished chairman was a member, and I had the great honor to be the chairman, purely because of seniority and not of ability; we rendered a report and we picked up quite a bit of information. We found out—now, here is what happened on the

eastern seaboard. And I won't take long. And we don't want this to happen on the western seaboard. We saw ships burning off my native South Carolina by the hundreds. Every night there was a free fireworks out there, coming off of Myrtle Beach and off Charleston, off Hatteras and off everywhere. The Germans picked them out and sunk them at their pleasure. They saved their ammunition, picked out the big ones and let the little ones through. That is how many they sunk.

Anyway, we had no oil. It was cut down. And 70,000 tank cars were used to haul petroleum. Anybody who knows anything about petroleum, knows that you don't haul crude oil in tank cars over long haul. You just don't do it unless you have got the Federal Treasury behind you.

But we had the Treasury behind us, and we had 70,000 tank cars hauling crude oil to the eastern seaboard, particularly the great area of the Marcus Hook-Philadelphia area, where so much of it was done, and the Baltimore area and all of there.

Anyway, that cost us up to $1 million a day. Because the only way we could haul it is by subsidy. The railroads couldn't do it. They did a magnificent job. They burned up the equipment. They changed their schedules. But they delivered up to 1 million barrels a day. Never before has one industry done more for the survival of a nation. But we did something with the Big Inch pipeline, the Little Inch, and the other pipelines. We delivered 600,000 barrels of oil into the Philadelphia area or the east coast area there by pipelines. We built it up that much.

But anyway—we proposed another pipeline, but that is water over the dam.

But we also got another pipeline from the Permean Basin to the west coast. That is the west Texas oilfield to which my distinguished former chairman and colleague has referred, with such clarity.

There was then, with the shortage of oil, Mr. Chairman, on the east coast and in the Nation, a surplus of at least 250,000 barrels a day in the west Texas oilfield that you couldn't get out.

Mr. SHORT. They are hemmed in now.

Mr. RIVERS. And we then and there, on October 5, 1943, in this little report, which I think is prophetic, we didn't dream it at the moment, but it has some prophesy. We then and there requested, in view of these things that happened, we recommended a pipeline from the west Texas oilfield to that area to which you refer in California, the Los Angeles.

We had the costs. We had figures on that. And, Mr. Chairman, that is even more accentuated now and needed, some sort of transportation.

Now, as the gentleman has given us, you can't transport crude two ways economically, and that is by tankship or by pipeline. You just can't do it. I think these supertankers might beat a pipeline a little bit, but darn little at that.

Mr. SHORT. Would the gentleman yield in——

Mr. RIVERS. Yes.

Mr. SHORT. We know now is the time if we are going to build a pipeline, now is the time, when we have the manpower and material available.

Mr. RIVERS. That is right. And time of peace to prepare for war.

Mr. SHORT. You can't build a pipeline overnight.

Mr. RIVERS. That is right.

Mr. SHORT. We can't wait until we get into a war before we take care of the supply.

Mr. RIVERS. That is right. I was coming to that.

Mr. SHORT. And I am awfully happy the gentleman from South Carolina brought out this point.

In World War II we came dangerously near losing that war in the first few months when the Nazis, with only 150 submarines sank 54 of our 59 tankers carrying oil from Curacao and Aruba to our eastern seaboard. And the whole Atlantic Ocean, from Norfolk to Miami, the Atlantic coast off Virginia, the Carolinas, Georgia, and Florida, was a sea of oil. It was "torpedo alley."

Mr. RIVERS. That is right.

Mr. SHORT. Now then, if the Nazis with 150 submarines knocked out our tankers so rapidly as that, what will the Russians, who now, according to our best intelligence, have at least 350 submarines of the snorkel type—large submarines that travel at great speed and at great depths—why, our lifeline, if we depended on the supply from the Near East or from South America, we are simply gambling with fate.

Our surest supply is from that west Texas field, by building a pipeline from that west Texas field to the west west Texas field to the west coast.

Mr. RIVERS. Now, Mr. Chairman—and I thank the gentleman for that great contribution—we have to find some way to get this crude oil into that area. But there is another thing we have got to consider. The production in California goes up to the Washington-Oregon area, what oil they get up there, and what is brought in by tank ship. So the Washington-Oregon area has to get their crude either from California or by ship from other sources.

Mr. SHORT. I am sure—if the gentleman would yield there—we must bear it in mind. An attempt will be made to try to convince this committee that Canada will supply our needs on the west coast. Now, they have a little pipeline from Canada down to the Pudget Sound area.

Mr. RIVERS. Yes. I know about that.

Mr. SHORT. But it is a small thing and it is a long way from Seattle to Los Angeles and San Diego, let me tell you that. And when we bring all the facts out—I am sure this committee will realize that Canada today is not producing a sufficient amount of oil to supply their own domestic needs. Canada is importing oil today, the same as the United States. We are importing over 1 million barrels a day into this country.

Mr. RIVERS. I understand that there is a lot of oil in Canada that these majors don't tell you about until they have to. They have been drilling up there for a long time.

Mr. SHORT. Yes, and if we get into a global conflict, that oil in Canada will go to the east coast. It wouldn't come down to southern California.

Mr. RIVERS. Wait a minute. What we have to do, Mr. Chairman—I have heard of these figures. I have some figures in my back pocket on Canada. There is no use for me to put my whole information out. [Laughter.]

But I will give you this much: I understand we can get oil from Canada, but I don't believe we should kill our own economy and dry up west Texas.

Mr. SHORT. That is it.

Mr. RIVERS. Because I have this much sense. And I run into some geologists and I run into a lot of people who call themselves geologists. I think I could do about as well in that job as some of them, and I don't know a geological book from a billy goat. But anyway, I understand if you don't operate an oilfield, it deteriorates.

Mr. SHORT. Right.

Mr. RIVERS. You know we have to do something about this. We heard about Canada. We know about the Seattle area. And if they got so much oil in Canada, let's pipe it into the Seattle area, and what is left over we will pipe down south into the California area and to San Francisco and Oakland and right on down to the Los Angeles-San Diego area. But let's get some transportation out of the west Texas field, Mr. Chairman. Time is a-wasting. We don't want the spectacle on the west coast that happened to the people on the east coast. I remember one of the members of our committee—and I make a speech at the slightest provocation, too, Mr. Chairman. [Laughter.]

Mr. HÉBERT. I want to say to the gentleman, from the members who have spoken already, you will notice how objective this hearing is. [Further laughter.]

Mr. RIVERS. I remember one member of our committee—he is deceased now and God, we revere his memory. He spoke about these poor New England people dishing out oil with tincups. And I made the observation that a cold South Carolinian was about as cold as a New Englander. Everybody was cold on the east coast because we couldn't get fuel. New England and South Carolina were the same.

Don't let's let that happen to the west coast. We ought to build two pipelines, Mr. Chairman. When they let these bids to find oil in the gulf area, of your native Louisiana——

Mr. HÉBERT. We have the tidelands there.

Mr. RIVERS. Wait a minute. You are going to see the prices that are made by the majors and others that go out there and drill oil. Oil is needed. Let's get plenty to the west coast and let's go into another little thing and build another pipeline to the east coast. We need that one, too. Don't laugh now.

Mr. HÉBERT. Mr. Courtney, do you have a statement?

Mr. COURTNEY. Mr. Chairman, the notification of this meeting and the inquiry was sent to the Secretary of Defense and to the Secretary of the Interior and to the Office of Defense Mobilization. We have responses from all three sources, Mr. Chairman. And each of the three invoked the provisions of our rules, which I will make reference to, so the record will be clear at this point.

Rule 7 of this subcommittee provides that when any member of the executive department shall have business before the subcommittee and matters affecting the national security shall be involved, it shall be the duty of such person or persons to advise the chairman of the subcommittee at least 24 hours in advance of his scheduled appearance of the contents of that portion of his proposed testimony which is classified, giving classification thereof and determination thereof in accordance with Executive Order 10501.

Now, Mr. Chairman, that is the Executive order of the President dated November 5, 1953.

Gen. W. W. White is here from the Department of Defense, and the Secretary of Defense has advised us that the material to be presented by General White is classified as secret.

Mr. HÉBERT. In its entirety, Mr. Courtney?

Mr. COURTNEY. He has a short prepared statement which will be made, Mr. Chairman.

The Director of Defense Mobilization, Dr. Flemming, has advised that there is a meeting of the National Security Council this morning. He can be available and will be available at half-past 2 this afternoon. He invites attention to rule 7 which I have just read and he states:

> It will be necessary for me to discuss matters classified as secret pursuant to Executive Order 10501.

We also have a response from the Interior Department, designating Mr. H. A. Stewart, who is here present this morning. He invites attention to the provisions of rule 7 and the Executive order of the President. He is present and has a short statement to make.

Therefore, Mr. Chairman, the question now is for the committee to rule on the matter of a closed session this afternoon and to hear such of the witnesses' prepared statements as are ready for public consumption.

Mr. HÉBERT. Members of the committee, you have heard counsel read the request and the invocation of our own rule 7 by the three witnesses that we are to hear, in which they advised us that they will discuss secret matters; his desire to discuss secret matters before us, and ask that it be held in executive session. What is the pleasure of the committee?

Mr. SHORT. Mr. Chairman, every member of this committee and those of us who served for any length of time know not only the desirability but necessity of not divulging highly secret or classified information that could give aid or comfort to the enemy. But over the long months and years that we have been here, we know that sometimes they throw a cloak of secrecy around a lot of stuff and then you read all about it the next day in the newspaper, and some of the stuff they give us, everybody knows already.

I hope that these hearings and the study will be as open to the public as it is absolutely possible. I think the American people who have to do the fighting and the dying in wars and who foot the bills—they have to do the fighting and the dying and the paying. I hope that we won't surround a lot of information with an aura of mystery, perhaps to cover up some mistakes that some people have made or to deny the public information to which it is due.

Mr. RIVERS. Mr. Chairman, at that point, I think—you might do well to start off in executive sessions to get your bearings. But can't we have some of these people talk to our distinguished counsel and find out whether or not their testimony is of a character that they can call it classified?

We had one man come in here at one time with a lot of classified stuff that was about as classified as the man in the moon, and when we looked at it and told him to declassify it, I think he struck out 2 or 3 "its" and 4 or 5 "thans" and sent it back to us.

Mr. HÉBERT. Of course the members of the committee are well aware of the chairman's attitude toward secret sessions and the use, as Mr. Short indicated, or using the desire or the request for a secret as a medium of covering something and not getting it into the light. However, in this particular case I discussed this matter with Mr. Courtney and Mr. Short previously, and Mr. Hess. Some vital things are involved. I direct the committee's attention to the fact that I think it would be wise to accede to the request at this moment, and then after we do hear the testimony, we would be able to make our decision whether it is in the public interest to release it or not.

Mr. SHORT. That is right.

Mr. HÉBERT. Is the committee in agreement?

Mr. SHORT. That is very reasonable and very fair.

Mr. HÉBERT. Mr. Hess.

Mr. HESS. In order to get a complete picture of this whole situation, I think we have to go into executive session with some of these representatives of the Defense Department, and as the chairman said, we can do just as we did in the instance that Mr. Rivers referred to.

Mr. COURTNEY. Yes.

Mr. HESS. After we have heard the testimony, we can ask the witness what portion of it can be released and then release it.

Mr. HÉBERT. The members of the committee may as well know: We are going to hear the war plans of this country.

Mr. SHORT. That must be in executive session.

Mr. HÉBERT. You certainly can't broadcast what the war plans are.

Mr. SHORT. No.

Mr. HÉBERT. The potentials and how the war is going to be fought. That is obviously what we are going to talk about. I am sure members of the committee agree that is not only secret but top secret.

Mr. SHORT. That is right.

Mr. HÉBERT. So secret that I am inclined not to even let the reporter take it down. There are no documents that can come from this committee possibly in connection with that.

So without objection, we will accede to the request of the three department representatives.

Now, General White.

Mr. COURTNEY. Mr. Chairman, may I interrupt the proceedings at this time for just a moment to make an announcement, since the afternoon session will be executive and the possibility of tomorrow we are not able to forecast.

We have had inquiries concerning the witnesses who will be heard on the west coast. I have here a list of the witnesses and the associations who are to be heard, and with your permission, Mr. Chairman, for the interest of interested individuals and concerns, I will read them.

We have Mr. Robert L. Minckler, of the Western Oil & Gas Association; Mr. Stark Fox, of the Oil Producers Association; Mr. D. B. O'Neill, of the Independent Refiners Association of California—all of these—Mr. L. R. Seaman, of the San Joaquin Valley Oil Producers Association, and Mr. Dan J. McGanney, of the Southern Pacific Pipe Lines, Inc., as prospective witnesses.

The hearings are to commence in the Federal Building in Los Angeles on the morning of Monday, July 11, and to continue until the witnesses all have been heard.

Mr. HÉBERT. General White, will you identify yourself for the record, please?

STATEMENT OF BRIG. GEN. W. W. WHITE, REPRESENTING THE SECRETARY OF DEFENSE

General WHITE. Mr. Chairman, and members of the committee, I am Brig. Gen. W. W. White. I am Staff Director of the Petroleum Logistics Division, Office of the Assistant Secretary of Defense, Supply and Logistics, in the Office of the Secretary of Defense.

The functions of my office, subject, of course, to the overall authority of the Secretary of Defense, are to determine Department of Defense petroleum policies and procedures, and to develop and implement the Department of Defense petroleum mobilization program. It also determines what action must be taken to insure meeting the wartime requirements, not only of the United States military departments, but also those of our allies and of the essential civilian activities necessary to support the war effort.

I respectfully remind the chairman and the committee that in accordance with the rules of the subcommittee furnished us, and in confirmation of our previous formal notification, it will be necessary to ask that rule 7 of the special rules of the subcommittee be invoked for the balance of my presentation.

Mr. HÉBERT. Well, General, you have heard the committee action on that request, and it is granted to you. However, I think there are several questions that the members of the committee would like to ask you at this time which I am sure can be answered in public.

General WHITE. Yes, sir.

Mr. HÉBERT. To begin with, you are representing and speaking for the Department of Defense and the Secretary, Mr. Wilson; is that correct?

General WHITE. Yes, sir.

Mr. HÉBERT. I direct your attention that when the last inquiry was held, when Mr. Short was chairman, that Mr. Forrestal, then the Secretary of Defense, appeared in person and supported the construction of a pipeline, as I recall it, then; is that correct?

Mr. SHORT. Yes.

Mr. HÉBERT. What, then, is the position of the Department of Defense today? Do you support a pipeline construction, or do you not support it?

General WHITE. We have already gone on record to the effect that we feel a pipeline such as has been discussed this morning would be of strategic value in time of war. It would broaden the mobilization base and it would be very definitely of strategic value.

We feel——

Mr. HÉBERT. You then do support the construction of a pipeline?

General WHITE. We have, on request of the Director of the Office of Defense Mobilization, so written and we have said that we support it to the extent of rapid tax amortization.

Mr. HÉBERT. In other words, to the extent of a certificate of necessity?

General WHITE. Of necessity; yes, sir.

Mr. HÉBERT. You do not—or do you support it to the extent of a certificate of essentiality?

General WHITE. No, sir.

Mr. HÉBERT. You do not support it?

General WHITE. No, sir.

Mr. RIVERS. So you just don't support it?

Mr. HÉBERT. That is the official position of the Secretary of Defense and the Department of Defense?

General WHITE. Yes, sir.

Mr. HÉBERT. Now, will you tell the committee why you support it in one instance and in another you do not support it, after making the declaration that it would be a contribution to the war effort in times of emergency?

General WHITE. This policy, Mr. Chairman, was established some years ago, and has been reexamined periodically since that time.

We have instructions from the Secretary of Defense which are policy instructions, and which indicate that at this time it is not felt by the Department of Defense that Government money should be used to sponsor a pipeline project.

Mr. HÉBERT. If a pipeline is so essential in wartime, are we to measure our safety by dollars? Now, you are speaking for the Secretary, General. I am not trying to put you on the spot. He sent you down here to talk for him, so you have to talk for him.

General WHITE. Yes; I will try.

Mr. HÉBERT. You can't rely on policies or just generalities. If you can't answer those questions we will have to have the Secretary himself down here.

General WHITE. I can answer those questions, but the answers, I am afraid, Mr. Chairman, will involve material which has been classified and not by us.

Mr. HÉBERT. I am hard put to understand that reply, that in one hand——

General WHITE. I don't mean to be obscure, also.

Mr. HÉBERT. I know that. You are operating within the limitations of your instructions. The committee recognizes that. However, at the same time it is the committee's responsibility to get a definite answer.

General WHITE. Yes, sir.

Mr. HÉBERT. From the responsible head of the Department. And if you are his spokesman, then you either must say that you can't speak for him or else we will have to have him in person down here. And, again, I say, I don't see where any classified material is involved, I don't see where any secrecy is involved, to answer the question which I asked. On the one hand, the Department says this is needed for an emergency, and we will support it if the taxpayer pays for it, but we will not support it if the Government pays for it, and I ask you where do you draw the difference between dollars in our defense?

That is a very simple question. You will have to talk about classified material to answer that?

General WHITE. I would like to try to answer the question, if I may answer it.

Mr. HÉBERT. You are in a difficult position, General, and I want you to know we sympathize with that position, and I don't want to press it. At the same time, if you can't answer it we will have to have Mr. Wilson to answer it.

General WHITE. The answer to that was developed through the use almost exclusively of highly classified material, Mr. Chairman, and I don't know whether I will get into trouble in talking in an open meeting about material which I know is classified.

Mr. HÉBERT. All right, then. We will rest on that. We will talk to you this afternoon about it, and we will find out.

General WHITE. Yes, sir.

Mr. HÉBERT. We will make a determination on that.

Mr. RIVERS. Let me ask the general 1 or 2 other questions. You are in charge of what, General?

General WHITE. Petroleum, logistics division, in the Department of Defense, sir.

Mr. RIVERS. So you represent the whole defense outfit—Army, Navy, and Air Force?

General WHITE. Insofar as petroleum is concerned; yes, sir.

Mr. RIVERS. Logistics means getting the right thing at the right place at the right time; is that right?

General WHITE. Yes, sir.

Mr. RIVERS. All right, sir. If you were in a war in the Pacific how would you like to have a few extra barrels of crude on the west coast?

General WHITE. I would sure like to have it, sir.

Mr. RIVERS. How are you going to get them there? Fly them in the BX97?

General WHITE. This afternoon I will be glad to explain to you, sir.

Mr. RIVERS. Well, I want to ask you this: What peculiar background do you have to make you occupy such an important position? Would you tell us a little about your background?

General WHITE. Yes, sir. How far back do you want me to go, Mr. Rivers?

Mr. RIVERS. Just as far back as your conscious will let you go. [Laughter.] You look like you are exactly about 39 years old.

General WHITE. Thank you for the compliment, sir.

Mr. SHORT. I think the general is a graduate of two very famous schools.

Mr. RIVERS. Let us let the record show that.

Mr. SHORT. West Point and MIT.

General WHITE. I graduated from the Military Academy in 1923, sir. Went into what was then the Air Service of the United States Army. After going through the flying schools and instructing as a pilot for several years I was sent to the Air Corps Engineering School, which is now the Air Force University of Technology at Wright Field.

Shortly thereafter I was sent to West Point as an instructor. While I was there the need became apparent for rewriting one of the textbooks. So I was sent to Massachusetts Institute of Technology to do postgraduate work in order to do that.

I didn't go back to West Point until after that job was completed. I was reassigned out to Wright Field.

In 1930 I resigned from the service and went with Standard Oil Co. of New Jersey, where I was technical manager of the newly formed aviation department. I worked in and around the New York area for about 4 years, and then was transferred to Europe, where I was made foreign aviation manager for the Standard Oil Co. of New

Jersey. I occupied that position until we got into the war, when I was called back here and was made aviation officer in the Petroleum Administration for War, which position I occupied until March of 1945.

I then went back to my company.

Mr. RIVERS. In 1945 you went back to the Standard Oil Co. of New Jersey?

General WHITE. Yes, sir.

Mr. RIVERS. Now Esso Standard Oil Co.?

General WHITE. Esso Standard Oil Co. is one of the companies. The Standard Oil Co. of New Jersey——

Mr. RIVERS. I know a lot about them. My stepfather spent 28 years with them.

Mr. HÈBERT. All right, General.

General WHITE. I was made vice president and director of the Esso Export Corp. in 1947, and held that position until I was recalled to active duty in February of 1954. I expect to go back to the Esso Export Corp. at the end of my 2 years of active duty, which will be in February of 1956.

Mr. RIVERS. Now, your background with an oil corporation wouldn't in any way influence your economic thinking of building a pipeline in time of peace to serve us in time of war; would it?

General WHITE. It certainly would not, sir.

Mr. RIVERS. The producing companies of the Standard Oil Co. in Texas are the Carter—and they are all owned by the Humble; aren't they? It is a kind of big outfit.

General WHITE. I am not sufficiently familiar with what Carter does to know whether they produce in west Texas or not.

Mr. RIVERS. But you know they produce in Texas; don't you?

General WHITE. Carter? I don't believe so, sir.

Mr. RIVERS. They must have stopped.

General WHITE. That is merely my own opinion.

Mr. RIVERS. Since 1943. But, anyway, I know Humble is fairly well known in that part of the country.

General WHITE. Yes, sir.

Mr. RIVERS. Would the Standard Oil Co. of which you were formerly associated—and I want to tell you I have the greatest feeling, for a member of my family worked with them, and they are my friends now.

General WHITE. Yes, sir.

Mr. RIVERS. But, of course, I am not against them. I am just pro-United States.

General WHITE. So am I, sir.

Mr. RIVERS. Like you are. So nobody is reflecting on you. I just want to ask you: Your association would in nowise influence your thinking as to the building of a crude pipeline from the west Texas field to the west coast?

General WHITE. Not in the slightest, sir.

Mr. RIVERS. I am sure it wouldn't. I said your economic thinking.

General WHITE. No; my economic thinking is just what my own brain can get out.

Mr. RIVERS. Of course, I wouldn't reflect on your patriotism and you know that.

Mr. HÉBERT. General, when does your tour end?

General WHITE. In February of 1956.
Mr. HÉBERT. This year you will end your tour?
General WHITE. Yes, sir.
Mr. HÉBERT. And you will return to Standard Oil at that time?
General WHITE. That is my expectation.
Mr. HÉBERT. You are not on the payroll of the Standard Oil at this time?
General WHITE. No, sir.
Mr. HÉBERT. And you are not paid any money at all from Standard Oil?
General WHITE. Yes, sir.
Mr. HÉBERT. You are?
General WHITE. I am collecting.
Mr. HÉBERT. You are collecting?
General WHITE. Yes, sir.
Mr. HÉBERT. Then you are on the payroll.
General WHITE. No; I am not on the payroll.
Mr. HÉBERT. Well, is it through stockholdings or salary?
General WHITE. I receive the amount of money which is the difference between my normal salary and my present salary.
Mr. HÉBERT. I would say that is still on the payroll. They are taking care of you. You are not losing anything serving the Government. In other words, your salary remains the same and Standard Oil at this time is compensating for the difference between your Government salary and the salary of a vice president of Standard Oil?
General WHITE. Yes, sir.
Mr. RIVERS. Of course they did that during the war.
Mr. HÉBERT. I just want the record to show. There is no implication in what I am asking you.
Mr. RIVERS. That wouldn't make you "agin" them?
General WHITE. No, sir; but it wouldn't make me for them, either.
Mr. RIVERS. I want to say to you—I asked about your economic thinking, and you told me about your economic thinking. I don't question your patriotism. I want you to understand that.
General WHITE. Thank you, sir.
Mr. RIVERS. Nor your honesty, either.
General WHITE. Thank you, sir.
Mr. RIVERS. I don't question that.
Mr. HÉBERT. General, does the Standard Oil of New Jersey, the people that you are with, have any interests on the west coast?
General WHITE. Not that I know of, sir.
Mr. RIVERS. That is Standard of California.
General WHITE. If they have any interest on the west coast, I don't know about that.
Mr. RIVERS. That is Standard of California.
Mr. HÉBERT. I am getting confused with all the Standards.
General WHITE. They have no relations.
Mr. HÉBERT. They have no relationships?
General WHITE. No, sir.
Mr. HÉBERT. Your people do not have any relationships or interests on the west coast, so far as you know?
General WHITE. That is correct, sir.
Mr. HÉBERT. And you would know as the vice president?

General WHITE. As a matter of fact, I better make that completely clear. We do as export corporation have bunker business out there which is handled through the Union Oil Co. and Standard of California. We have aviation businesses out there for our international airlines, which is handled by Union Oil Co., as a method of completing our international chain of servicing.

Mr. COURTNEY. That is a distribution system?

General WHITE. A distribution.

Mr. HÉBERT. Strictly a distribution. You don't have any production or refining?

General WHITE. Yes, sir.

Mr. RIVERS. That is production and not crude?

General WHITE. That is correct, sir.

Mr. HÉBERT. In other words, the construction or nonconstruction of a pipeline would in no way affect Esso Standard of New Jersey?

General WHITE. Not that I can think of in any way, sir.

Mr. RIVERS. I think the general is making himself clear. I am perfectly clear.

Mr. HÉBERT. Mr. Short?

Mr. SHORT. No.

Mr. HÉBERT. Thank you very much, General. We will see you this afternoon at 2:30.

Mr. COURTNEY. Mr. Kendall, the general counsel of the Office of Defense Mobilization, is here. He has a short statement, Mr. Chairman.

Mr. Flemming, as you know, is with the Security Council this morning.

STATEMENT OF CHARLES H. KENDALL, GENERAL COUNSEL, OFFICE OF DEFENSE MOBILIZATION

Mr. KENDALL. Mr. Chairman and members of the committee, my names is Charles H. Kendall. I am general counsel of the Office of Defense Mobilization and am appearing this morning on behalf of the Director of the Office of Defense Mobilization to submit his opening statement on the matter being investigated by the subcommittee. Mr. Flemming very much appreciates the courtesy of the subcommittee in agreeing to hear him this afternoon in executive session since the details of the matter before the subcommittee which he then proposes to discuss carry a security classification.

(The statement referred to follows:)

STATEMENT OF ARTHUR S. FLEMMING, DIRECTOR, OFFICE OF DEFENSE MOBILIZATION

I appreciate this opportunity to give the views of the Office of Defense Mobilization on the need for improved facilities for the transportation of petroleum to the west coast as a defense measure.

The Director of the Office of Defense Mobilization has a policymaking and coordination responsibility in connection with the necessary expansion of productive capacity and supply for national defense purposes. The Director is the certifying authority under section 168 of the Internal Revenue Code pursuant to which firms undertaking industrial expansion may be granted the right to amortize some part of the cost of such expansion for tax purposes over a period of 5 years rather than over the normal useful life of the facility. The Director is also the certifying authority for expansion programs for national defense purposes under title III of the Defense Production Act which authorizes certain other forms of Government assistance, including loans and loan guaranties.

In the determination of policies and in the certification of particular programs the Director of the Office of Defense Mobilization secures the advice of appropriate agencies of government having particular responsibility in the area of the proposed expansion. In the case of pipelines, applications for certificates are reviewed by the Oil and Gas Division of the Department of the Interior and by the Department of Defense, and their recommendations for action are considered by the Office of Defense Mobilization.

This procedure has resulted in the issuance of several certificates for tax amortization on pipeline construction, including two certificates for pipelines from west Texas to the west coast. One certified proposal was made by the West Coast Pipeline Co. and the other by the Southern Pacific Co.

No certificates have been issued authorizing Government incentives to the construction of pipelines other than tax amortization.

A determination of shortage to meet mobilization requirements is basic to the decision to issue a certificate. Requirements for pipeline expansion call for estimates of military needs by areas, which are supplied by the Department of Defense, and of other needs supplied by the Department of the Interior. Against these estimated requirements are placed the estimated supply figures, the difference then becoming the basis for the establishment of an expansion goal. When such a goal is established specific proposals are reviewed by the appropriate agencies and in the Office of Defense Mobilization and if the proposed construction would serve in some measure to meet the goal, a tax amortization certificate is issued covering that portion of the construction cost which serves a defense purpose.

Certificates for Government assistance other than tax amortization are not issued unless it appears that tax amortization alone will not meet the defense need. Such additional aids are given separate consideration in the light of all the facts, involving as they do the risk of public funds.

The results of Defense Department, Interior Department, and Office of Defense Mobilization studies of petroleum requirements and supply on the west coast are classified for security reasons. It is necessary, therefore, that my discussion of these matters be conducted in the executive session of the subcommittee this afternoon.

Mr. HÉBERT. Now, Mr. Kendall.

Mr. KENDALL. Yes, Mr. Chairman.

Mr. HÉBERT. Can you tell the committee how many certificates of necessity are now in existence for the construction of a pipeline? I think you said presentations were made by the Southern Pacific Co. and the West Coast Pipeline. The language you use is one certified proposal was made by the West Coast Pipeline Co. and the other by the Southern Pacific Co. Were they issued——

Mr. KENDALL. Yes, sir; they were issued.

Mr. HÉBERT. They are issued and now in existence?

Mr. KENDALL. One certified proposal. A certified proposal was made by the West Coast Pipeline Co. and the other by the Southern Pacific Co.

Mr. HÉBERT. Any other certificates of necessity issued for the construction of a pipeline from thes west Texas fields to the west coast?

Mr. KENDALL. No, sir.

Mr. HÉBERT. These are the only two in existence?

Mr. KENDALL. That is right, sir.

Mr. HÉBERT. Have they utilized those certificates?

Mr. KENDALL. It is my understanding that the Southern Pacific Co. has begun construction, but I am not certain of that, sir.

Mr. HÉBERT. Because that is very important to know, if a line is being constructed now.

Mr. KENDALL. I am assured that is correct from people behind me who know more about it than I do.

Mr. HÉBERT. Do you know what the terminals of Southern Pacific are?

Mr. KENDALL. No, sir; but there are people in the room who know much more about it than I do. Interior can tell you.

Mr. HÉBERT. Interior can tell us?

Mr. KENDALL. Yes, sir.

Mr. RIVERS. When you said pipeline, what kind of products? Products line or crude line?

Mr. KENDALL. Again, I am not an oil man. I understand this is the Southern Pacific line you had reference to? It is being built for use as a products line.

Mr. RIVERS. Products line. But no crude lines are proposed, certificated or in the process of being constructed, so far as you know?

Mr. KENDALL. Yes, the West Coast Pipeline Co.'s application is for a crude line.

Mr. RIVERS. Is that for crude?

Mr. KENDALL. I believe that is correct; yes.

Mr. RIVERS. I just wanted to find out.

Mr. KENDALL. That has been certified.

Mr. RIVERS. Do you know the diameter of that?

Mr. KENDALL. No, I don't, sir.

Mr. HÉBERT. Interior Department witnesses can tell us that.

Mr. COURTNEY. One question so we can tie this thing together.

The certificate which you say has not been granted is the certificate which would be issued under the authority of the President's order of September 26, 1953?

Mr. KENDALL. To which you earlier referred.

Mr. COURTNEY. To which I have earlier referred.

Mr. KENDALL. That is correct.

Mr. COURTNEY. That is the so-called certificate of essentiality?

Mr. KENDALL. Yes.

Mr. HÉBERT. There is no certificate of essentiality?

Mr. KENDALL. No, sir.

Mr. HÉBERT. Mr. Fisher?

Mr. FISHER. No.

Mr. HÉBERT. Mr. Short?

Mr. SHORT. No.

Mr. HÉBERT. The witness for the Interior.

Thank you very much, Mr. Kendall.

Mr. RIVERS. Let me ask him just one question.

You don't have any classified information in your possession that would prevent your being interested in the Government building a pipeline to carry crude, have you?

Mr. HÉBERT. Well, Mr. Rivers, I may suggest that Mr. Kendall is not the one to answer that question since he is merely reading the statement of Dr. Flemming. Dr. Flemming will be here this afternoon and you can ask him the question.

Mr. RIVERS. Excuse me. I didn't mean to embarrass you.

Mr. KENDALL. That is all right, sir.

Mr. HÉBERT. Thank you.

Mr. COURTNEY. Mr. Stewart.

Mr. SHORT. In order to clear up the record here, I think I stated that the certificate of necessity was granted by the former administration. I think perhaps I am in error. But when was the first certificate of necessity granted? If it is 1953, of course it was under this administration. What I wanted to say when I was making my

original statement: That a certificate of necessity had formerly been granted or previously granted. I didn't know the exact date that that certificate was issued.

Mr. KENDALL. I believe it was late 1952, Mr. Short.

Mr. SHORT. Late in 1952. Well, it was under the former administration, then.

Mr. KENDALL. The present witness can answer that.

Mr. SHORT. The date?

Mr. STEWART. It was April 28, 1952.

Mr. SHORT. Yes. It was, then, under the former administration. That was my impression.

Mr. STEWART. Yes.

Mr. SHORT. Before the 1952 election.

Mr. STEWART. Yes; April 28, 1952.

Mr. SHORT. Well, I was correct, then, in my statement. I didn't want to commit an error.

Mr. COURTNEY. Mr. Stewart.

STATEMENT OF H. A. STEWART, DIRECTOR, OFFICE OF OIL AND GAS, DEPARTMENT OF THE INTERIOR

Mr. STEWART. I am H. A. Stewart, Director of the Office of Oil and Gas of the Department of the Interior. On behalf of the Department, I will be glad to make available to this committee any information it may require on the petroleum situation on the west coast. This will include information on the potential supply of petroleum products on the west coast in event of war.

A great deal of the information we have, of course, ties directly into classified information, and consequently it should be presented in the closed session this afternoon. However, the opening statement of the chairman and the quotation that Mr. Short made from his opening statement in a previous investigation of this same thing points up the major problem that my office has had on it since the Oil and Gas Division was first established in 1946. It is the one thing that this office has kept under constant study, continuously, not only for the west coast but for the entire petroleum supply and demand of the United States, both peacetime and wartime.

We have to evaluate the peacetime and wartime petroleum requirements of this country and coordinate the indicated requirements with the availability of crude oil, transportation facilities, and refinery capacities.

We have given the west-coast aspects particular attention. Petroleum supply-demand studies were initiated by the Petroleum Administration for War during World War II. They were carried on after that war ended by the Oil and Gas Division in the Department of the Interior. During the Korean war the Petroleum Administration for Defense made additional studies. Since termination of that defense agency on April 30, 1954, the Office of Oil and Gas (formerly the Oil and Gas Division) has continued to make petroleum and gas supply and demand studies and to make evaluations of the ability of the petroleum and gas industries to meet wartime requirements.

In the course of these studies, the crude-oil supply for California refineries has received special attention, particularly the question of whether crude oil from west Texas would be required to keep these

refineries operating in either peacetime or wartime. The studies have indicated that in peacetime there is no need for a crude-oil pipeline from west Texas to California. In event of war there not only would be no need for such a crude-oil line, but west Texas crude oil would be needed to meet the petroleum requirements of the Eastern United States.

The availability of crude oil in the California producing fields is closely in balance with the present refining capacity in the State of California. In event of war this would still be true.

I will review briefly overall petroleum supply and demand of the entire west-coast area in order to give proper perspective to the California situation.

The situation that Congressman Short and Congressman Rivers faced in the investigation they made in 1948 was of the petroleum supply and demand as it was then. The industry has changed, the country has changed, there have been major developments in a great many directions, and the situation as it obtains today on the west coast is materially different than it was in 1948.

Mr. RIVERS. Could I inject right there, since you departed from your written statement, Would an additional crude-oil pipeline to the East be a desirable thing from Texas in the event of war?

Mr. STEWART. We have such an additional oil line in the Big Inch and the Little Inch.

Mr. RIVERS. No; you don't have it. It only delivered 600,000 during the war.

Mr. STEWART. Well, 600,000 plus——

Mr. RIVERS. That won't handle one-half of the population of the East. It might handle a half.

Mr. STEWART. Congressman, that is one of the things that we are deeply involved in studying.

Mr. RIVERS. The Big Inch and the Little Inch cannot supply the east-coast needs in time of war. I know they can't do it in time of war. I don't know what they can do in time of peace. I mean they carry gas now.

Mr. STEWART. The Big Inch and the Little Inch alone can't supply all of the crude that might be needed on the east coast.

Mr. RIVERS. That is the question I asked you.

Mr. STEWART. But as of today we have a big pipeline system throughout the United States which——

Mr. SHORT. That is, you have pipelines from the Texas area to the East, but you don't have any to the West.

Mr. STEWART. We have them to the East. We don't have them to the West.

Mr. RIVERS. Well, let me ask you this. You said that in time of war we need this west Texas crude for the East.

Mr. STEWART. Right.

Mr. RIVERS. How are you going to get it out of there?

Mr. STEWART. Through the present existing pipeline system.

Mr. RIVERS. To where?

Mr. STEWART. To the east coast and up to the Central United States.

Mr. RIVERS. You could use all the production from the west Texas oilfield, and you have transporting facilities available now to deliver flush production to the east coast? That is my question. Answer my question.

Mr. STEWART. You are leading directly into an answer which I can quickly give you but which is classified.

Mr. RIVERS. Good God, during the last war 250 surplus barrels a day weren't classified.

Mr. STEWART. The answer to your question is as of the present classified, and I can't give it to you this morning. I can really give it to you.

Mr. RIVERS. It is not classified—if we get in another war, the tankers will be piled up on the east coast again. And I don't believe that the gas lobby in this country can prevent this committee from considering another crude pipeline to the East. I can tell you that. And I don't know what influences your figures, but I know the gas lobby has something to do with what we need for the east coast. We use gas in South Carolina, but the pipelines we are going to build now might be used for gas in time of peace, and crude oil in time of war. I know what your answer is, in secret session. But you can give it that way; it suits me, any way you want to give it.

Mr. STEWART. I will be glad to give it to you. And I think we can clear your mind on that phase.

Mr. RIVERS. I am pretty well confused now. [Laughter.]

Mr. HÉBERT. Mr. Stewart, may I ask you a question, too, since you reverted to refer to Mr. Short. Mr. Short said they were importing some 60,000 barrels——

Mr. SHORT. Fifty-one thousand barrels.

Mr. HÉBERT. Fifty-one thousand barrels of crude to the west coast and also that the refineries I think were 300,000 under capacity.

Mr. SHORT. Yes.

Mr. HÉBERT. How do you reconcile those figures, then, if it is in balance out there?

Mr. STEWART. Wel, perhaps, if you will let me finish——

Mr. HÉBERT. Go ahead and finish. He made the point there. I will let him finish the statement. But I want to stop him if he makes any point of misstatement.

Mr. STEWART. I have the figures to substantiate these questions.

Mr. HÈBERT. All right, if you will adhere to your written statement, we will get along faster.

Mr. STEWART. I think it would be desirable to review briefly the overall petroleum supply demand of the entire west coast—not California alone but the entire west coast—in order to give perspective to the California situation.

At the close of World War II California refineries met the petroleum-product requirements of Washington, Oregon, California, Nevada, Arizona, and the Territories of Alaska and Hawaii, and had exports elsewhere in the Pacific.

Since World War II the supply picture has changed. Pipelines have been built to move petroleum products from Montana, Wyoming, and Utah into Idaho and eastern Washington. Another product pipeline between El Paso, Tex., and Los Angeles, Calif., is under construction. These product pipelines make petroleum products available in what once was the market of the California refiners. And of course dependent on California refineries for supply.

Mr. SHORT. Mr. Stewart, could you tell us a little more about the pipeline that is now under construction from El Paso to Los Angeles?

Mr. HÉBERT. Is that the Southern Pacific line?

Mr. STEWART. It is the Southern Pacific pipeline, which is an 8-inch line.

Mr. SHORT. An 8-inch line.

Mr. STEWART. An 8-inch line from El Paso to Phoenix and a 12–16-inch line from Phoenix to Los Angeles.

Mr. SHORT. How much of that line is completed, or what mileage?

Mr. STEWART. I can't give you that. It is just actively under construction.

Mr. RIVERS. How much crude oil will an 8-inch pipeline carry a day?

Mr. STEWART. An 8-inch pipeline will not carry very much.

Mr. RIVERS. As a matter of fact, Mr. Stewart, you are not building a small pipeline to carry crude for a long distance, are you?

Mr. STEWART. That is correct. And that pipeline would not be needed for crude, but it would be needed for products.

Mr. RIVERS. Products, that is right, sir; yes, sir.

Mr. STEWART. And the present capacity of the line is one thing, built and powered to meet the present commercial demand. That line can be stepped up by increased pumping capacity and perhaps by some looping, and it might have a capacity upward of 75,000 barrels a day of products.

Mr. RIVERS. Yes.

Mr. STEWART. Now, it wouldn't be used for crude oil at all.

Mr. RIVERS. If you build a 24-inch pipeline of tubular steel from El Paso to the area about which Mr. Short talks, how many gallons or how many barrels of crude do you deliver a day under normal conditions?

Mr. STEWART. Oh, probably 450,000, if you put enough horsepower on it. In addition to pipelines, two new refineries have been constructed in the Ferndale area of northwest Washington. One of these has a rated capacity of 35,000 barrels per day. The second refinery, which will be completed within the next few months, will have a capacity of 50,000 barrels per day. These two refineries and refineries in the Vancouver area of British Columbia will get crude oil from the Province of Alberta, Canada, through the existing transmountain pipeline. This pipeline has a present capacity of 150,000 barrels per day. When needed, additional pumping facilities can be constructed to increase the capacity to 300,000 barrels per day. Crude oil is available in Canada to supply the line. The new refineries in northwest Washington can readily meet the products requirements of Alaska and contribute materially to the requirements of Washington and Oregon. This will still further reduce the market of the California refineries.

Rehabilitation and expansion of old refineries, construction of new refineries such as those in Japan, the Philippines, and Australia will largely meet the petroleum product requirements of the western Pacific. These refineries obtain their crude-oil supplies from Middle East and Far East sources. Planned construction of a new refinery in Hawaii will still further reduce the market supplied by California refineries.

There has been another factor developing since World War II which has had and will continue to have an important bearing on the west coast demands for petroleum products. This is the increased transmission of natural gas from west Texas and New Mexico. At

present large natural-gas transmission lines are moving 1,200 million cubic feet per day of natural gas into California. This will shortly be increased to 1,800 million cubic feet. Another gas transmission pipeline is now under construction from New Mexico to the Pacific Northwest which is planned to move 300 million cubic feet of gas per day into the Washington-Oregon area. This gas competes directly with petroleum products both as an industrial fuel and for space heating. This total of 2,100 million cubic feet per day represents an oil equivalent of 350,000 barrels per day.

It would appear therefore that the demand for products on the California refineries will be reduced to the extent that refineries elsewhere will supply part of the demand heretofore carried by California and in addition the California refineries will lose markets to natural gas.

The remaining demand on California refineries will still be substantial and can be expected to increase, but the availability of crude oil in California will continue in sufficient amount to meet the refinery requirements. To the extent that any deficiency in crude supply may develop, this can be readily supplied by the already existing transportation facilities.

The future demand on California refineries will be largely for the lighter products, such as gasoline, kerosene, diesel fuel, and furnace oils. This will accelerate the evolution already under way under which the California refineries are increasing use of catalytic and coking equipment. This means that instead of producing a large volume of heavy fuel oil, the refineries will be able to crack it and produce more of the lighter products. Consequently, there can be a material increase in demand for these lighter products without any increase in demand for crude oil.

It therefore appears that there is not now and that there is no probability that west Texas crude oil will be needed in California in the foreseeable future.

It appears equally evident that if and when additional crude oil is needed it can be provided more readily by moving Canadian crude by existing pipeline and tanker facilities than it could be by pipeline from west Texas to California through a pipeline which is not presently constructed and for which there appears to be no economic requirement.

With respect to potential wartime requirements, the critical limitation will be refinery capacity. The Bureau of Mines reports 1,250,000 barrels per day of refining capacity in the State of California as of January 1, 1955. This rate of capacity would require approximately 1,165,000 barrels per day of crude oil. The most recent information we have available on California productivity of crude oil is 1 million barrels per day, to which should be added an estimated 125,000 barrels of shut-in production in the Elk Hills Naval Reserve and 150,000 barrels per day readily available from Canada.

This indicates that there is potentially available more crude oil than the California refineries can process. Consequently, there would be no justification for any Government financial assistance for a crude-oil pipeline to be built in peacetime from west Texas to California.

The Office of Oil and Gas stands ready to furnish this committee with such additional information or data as may be required in this

investigation. However, much of this information is classified and can be presented only in an executive session of the committee.

Mr. HÉBERT. Thank you very much, Mr. Stewart.

Mr. Stewart, how long have you occupied your present position with the Department of the Interior?

Mr. STEWART. 5½ years.

Mr. HÉBERT. 5½ years?

Mr. STEWART. Yes.

Mr. HÉBERT. You are a career official, then?

Mr. STEWART. I am, in the past 5½ years. Previously, I have had some 30 years' experience in oil production in the Rocky Mountain region of this country, much of it while in the employ of the Texas Co. in charge of their producing department in the Rocky Mountain territory.

Mr. HÉBERT. I ask you the question which we asked the general before. And I again emphasize there is no implication in this question except for the record. Because we readily recognize if you want to get an oilman you wouldn't go in a shoe store. Naturally, you would go to oil people.

Are you connected now in any way with any oil company?

Mr. STEWART. No. I retired from the Texas Co. the 1st of September of 1948.

Mr. HÉBERT. Are you on a pension?

Mr. STEWART. I am on a pension.

Mr. HÉBERT. From the Texas Oil Co.?

Mr. STEWART. From the Texas Co. The pension is paid to me by an insurance company as a result of an annuity purchased jointly by me and the company.

Mr. HÉBERT. And you are now a career——

Mr. STEWART. I am now a career Government employee.

Mr. RIVERS. May I propound a question?

Mr. HÉBERT. Yes.

Mr. RIVERS. And your time was spent in the producing field?

Mr. STEWART. Production, primarily.

Mr. RIVERS. And you are familiar with the present existing—what is the word you use in the old business, surpluses—no, not surpluses.

Mr. STEWART. Reserve productivity.

Mr. RIVERS. Reserves?

Mr. STEWART. Yes.

Mr. RIVERS. The present reserves.

Mr. STEWART. Reserves and productivity.

Mr. RIVERS. Yes, sir. Are you familiar with the present reserves of this country?

Mr. STEWART. Yes, sir.

Mr. RIVERS. And it is your considered judgment that in the California area in a time of war the reserves are sufficient to meet any request or requirement by the military?

Mr. STEWART. Mr. Rivers, the point there is that regardless of the amount of crude oil you might have available you must have refineries to process it.

Mr. RIVERS. That is right.

Mr. STEWART. The refineries are your bottleneck. And as of January 1 of this year, the Bureau of Mines gives the California re-

fining capacity—that is within the State of California—at 1,250,000 barrels per day.

Mr. RIVERS. And there is no way on earth you could utilize that?

Mr. STEWART. Utilize all of it—except that you can't run a refinery day in and day out at its rated capacity.

Mr. RIVERS. Of course, you can't. You would burn it up. And this crude eats it up.

Mr. STEWART. The net result is that we have estimated that the California refineries as of now can handle 1,165,000 barrels per day of crude oil.

Mr. SHORT. How many are they actually handling today? You say they can. You have a refining capacity of 1,165,000 barrels per day.

Mr. STEWART. That is a throughput rate, running to what amounts to full time.

Mr. SHORT. Yes. That is the maximum capacity, refining capacity in California.

Mr. STEWART. In the State of California as of now, according to the Bureau of Mines.

Mr. SHORT. How many barrels per day are you actually refining? Your maximum capacity is 1,165,000 barrels. But they are actually refining less than 1 million, isn't it? Your present crude-oil production in California is only nine—well, you said about a million, 975,000 barrels, or approximately 1 million barrels.

Mr. STEWART. For the first 4 months of this year, Mr. Short, the crude-oil demand by the California refineries was 1,040,000 barrels per day.

Mr. RIVERS. Well, your testimony is this: That they have sufficient crude in the California area to supply the maximum requirement?

Mr. STEWART. To supply all that the refineries can process.

Mr. SHORT. In time of peace.

Mr. RIVERS. In time of war.

Mr. STEWART. In time of war, the basic capacity does not change.

Mr. RIVERS. Does not change.

Now, you are also keeping in mind the need for synthetic rubber on the basic crude production and reserves.

Mr. STEWART. Yes, sir. All of the byproducts.

Mr. RIVERS. And when I say refinery, I am talking about everything that uses crude oil.

Mr. STEWART. Yes, sir.

Mr. RIVERS. Now, say the Elk Hills were denied you its flush production—and you can't take a field and make it flush production all the time, can you? That is what they tell me.

Mr. STEWART. You can't. But the figure that I have given is 125,000 barrels shut in.

Mr. RIVERS. Yes.

Mr. STEWART. That figure for Elk Hills is more conservative than the figures that are normally used for the Elk Hills production rate.

Mr. RIVERS. With the implementation to you now of reserve potential of a modest addition from Elk Hills, your testimony is that we have ample crude to meet any eventuality?

Mr. STEWART. To keep the refineries filled.

Mr. RIVERS. To keep the refineries filled?

Mr. STEWART. Yes, sir.

Mr. SHORT. In case of war you would need more refineries, would you not?

Mr. STEWART. You would need more refineries.

Mr. SHORT. And you would naturally need more crude?

Mr. STEWART. But bear in mind, Mr. Short, that it takes 2 years or more to build a modern refinery. Consequently, we can't predicate war needs on the possible construction in wartime of such plants.

Mr. SHORT. Today we are importing approximately 50,000 barrels daily into California? We are importing 50,000 barrels a day?

Mr. STEWART. The imports average for the first 4 months of this year: 74,000 barrels to the entire Pacific coast. That includes the imports to the new refineries in the Washington area.

Mr. SHORT. Yes, but you are actually importing around 50,000 barrels a day into California?

Mr. STEWART. Yes.

Mr. SHORT. Where do these imports come from?

Mr. STEWART. The imports come from a variety of places—some from the Middle East, some from Borneo, some from Venezuela.

Mr. SHORT. That is Aruba.

Mr. STEWART. Some from Indonesia.

Mr. SHORT. That is right.

Mr. STEWART. A variety of places.

Mr. SHORT. Now, in case of war, and if the supply line were cut, where would you get this 50,000 barrels? You think California could supply it?

Mr. STEWART. California alone can supply 1,125,000 barrels and perhaps 1,175,000 if Elk Hills will do more than this 125,000-barrel figure I am talking about. So in California alone we have substantially the amount of crude oil that could be processed.

Mr. SHORT. How long would it take you to step up to that maximum production?

Mr. STEWART. You should be able to step up to that very quickly.

Mr. RIVERS. As fast as you can connect the hoses and get the pumps?

Mr. STEWART. A matter of days, probably.

Mr. SHORT. Yes.

Mr. RIVERS. What is your knowledge of the Canadian reserve? Would you say there is now, insofar as you know, up there over 1 billion barrels in Canada?

Mr. STEWART. Yes; there are well over a billion barrels.

Mr. RIVERS. Well over a billion known reserves in Canada?

Mr. STEWART. Yes.

Mr. RIVERS. Readily available?

Mr. STEWART. Yes; except for pipeline outlet.

Mr. RIVERS. And you testified a while ago that there was adequate pipeline outlets there to the Seattle area?

Mr. STEWART. There is this Trans-Mountain Pipeline.

Mr. RIVERS. Yes.

Mr. STEWART. From Edmonton to the Puget Sound area.

Mr. RIVERS. Yes, sir.

Mr. STEWART. Which has an actual capacity of 150,000 barrels.

Mr. RIVERS. Yes.

Mr. STEWART. And a potential of 300,000 barrels per day.

Mr. RIVERS. Well, if we were in a war and everything, of course, would be regimented, is there enough available crude for that area?

Mr. STEWART. Oh, yes; and then some.

Mr. RIVERS. I am talking about transportable crude.

Mr. STEWART. Transportable crude.

Mr. RIVERS. That is available.

Mr. STEWART. The big job would be to transport it east. The pipelines to the east from the Alberta fields—pipelines to the southeast are not nearly as large.

Mr. RIVERS. You wouldn't have to rely on ocean tankers at all? You have pipeline capacity enough now to take care of the Washington-Oregon area?

Mr. STEWART. Yes.

Mr. RIVERS. And you have reserves now to take care of them?

Mr. STEWART. Yes; ample.

Mr. SHORT. Though they are our good friends, do we have absolute assurance or guaranty in time of war that we would be supplied from Canada?

Mr. STEWART. That is our biggest mainstay.

Mr. SHORT. You would rather depend, then, upon the Canadian source than you would the source down in Texas?

Mr. STEWART. Mr. Short, the Canadian source is already tapped and there is a pipeline.

Mr. SHORT. Yes, but in case of war suppose it would be cut off?

Mr. STEWART. Well, that seems to be a little bit——

Mr. SHORT. Farfetched?

Mr. STEWART. Farfetched to me.

Mr. SHORT. Beyond the realm of imagination?

Nothing is impossible in these days of uncertainty.

Mr. STEWART. But bear in mind, too, that the overall petroleum demands in the eastern part of the United States, east of the Rockies, will probably absorb all of the producibility of Texas.

West Texas crude would be needed to the east even more than it would be needed on the west coast.

Mr. SHORT. If the war were in the Atlantic and not in the Pacific. Are you giving us now your military judgment?

Mr. STEWART. No, I am not giving any military judgment.

Mr. SHORT. It depends on the type of war.

Mr. RIVERS. Civilian, too.

Mr. STEWART. Crude oil is not needed in excess of the refining capacity on the west coast.

Mr. SHORT. Today, in time of peace, sir?

Mr. STEWART. Today.

Mr. SHORT. In time of war we would need it, wouldn't we?

Mr. STEWART. We might need products, but we would not need crude because we would not have the refineries in which to process it.

Mr. RIVERS. How would you like to have a new products line from the west Texas area into the California area, or a new gas line?

Mr. STEWART. We are getting new gas lines.

Mr. RIVERS. New gas lines?

How would you like to have another one in time of war, since gas has been taking the place of this other?

Mr. STEWART. A products line to the west coast in time of war might be very desirable.

Mr. RIVERS. You might look into that area.

Mr. STEWART. And in making that statement I join the average military man who would always like to have an extra 10 tanks or an extra battleship whether he needs it or not.

Mr. SHORT. That is right.

Mr. HÉBERT. Mr. Fisher.

Mr. FISHER. Mr. Stewart, what is the size of the known reserves in California, oil reserves?

Mr. STEWART. I can supply that, but I can't quote it offhand.

Mr. FISHER. You spoke of the—I think that would be very important, don't you, in projecting ourselves into the future, would be the potential of production in California, as would be of course in Canada or the Permian Basin or anywhere else, in projecting ourselves into future demands.

Mr. STEWART. We have undertaken to do that for a 5-year period. We can furnish that information readily this afternoon.

Mr. FISHER. I think it would be interesting to have that, the known reserves in California that you as an expert could rely upon.

Mr. STEWART. The reserves, I am told, are currently between 3½ and 4 billion barrels.

But the projection is another matter that I would rather discuss this afternoon.

Mr. FISHER. I see.

Mr. HÉBERT. Well, thank you—are you finished at this time?

Mr. FISHER. Well, do you have similar information on the west Texas field or the Permian Basin?

Mr. STEWART. Yes.

Mr. FISHER. Just for the record.

Mr. HÉBERT. We will bring that.

Are you finished now?

Mr. FISHER. Yes. He can bring it later.

Mr. HÉBERT. You will bring this afternoon that information Mr. Fisher asked you for?

Mr. STEWART. Yes.

Mr. HÉBERT. Thank you very much, Mr. Stewart.

The Chair desires to make this announcement for the benefit of the press and the public, that this afternoon's session at 2:30 will be in executive session.

Only those cleared for secret information will be admitted to the committee room. And they will be cleared by the representatives of the departments which will be represented here, namely, Defense, Interior, and the Office of Defense Mobilization.

We are not in a position to forecast when the next open meeting will be held, whether tomorrow morning will be open or closed.

It all depends upon developments at the afternoon session.

However, due notice will be made before tomorrow as to whether or not the session will be executive in order that interested parties may be present.

The committee stands recessed now until 2:30 o'clock.

(Whereupon, at 12:18 p. m., the committee recessed, to reconvene at 2:30 p. m. the same day—in executive session.)

SOURCES OF SUPPLY OF OIL AND OTHER PETROLEUM PRODUCTS FOR THE WEST COAST OF THE UNITED STATES FOR MILITARY AND OTHER REQUIREMENTS

MONDAY, JULY 11, 1955

HOUSE OF REPRESENTATIVES,
COMMITTEE ON ARMED SERVICES,
SUBCOMMITTEE FOR SPECIAL INVESTIGATIONS,
Los Angeles, Calif.

The subcommittee met at 10 a. m. with the Hon. F. Edward Hébert (chairman) presiding, and the following members present: Mr. Hess, Mr. Rivers, Mr. Miller, and Mr. Short.

Mr. HÉBERT. The committee will come to order.

The Chair desires to make a statement at this time.

For the information of the public in attendance upon this meeting, and the prospective witnesses, since we are meeting for the first time on this subject outside the city of Washington, I should like to state the precept under which the subcommittee is conducting this study. We are directed to consider the following:

1. The sources of supply of oil and other petroleum products for the west coast of the United States for military and other requirements;

2. The amount of oil and other petroleum products needed on the west coast of the United States to meet the ordinary military and other requirements; and

3. Whether in the event of a national emergency there are adequate supplies of oil and other petroleum products on hand on the west coast of the United States to meet all military and other requirements.

In Washington we have heard from the Department of Defense, the Office of Defense Mobilization, and the Department of the Interior.

Because of the highly classified nature of some of the information, our hearings were held in closed session. However, the sessions here will be open to the public and the testimony will relate to information which is available generally to the public. In short, we will be having the benefit of the expert opinion and advice of men qualified in the business, resorting to information which is available to them and to others.

Our hearings here will continue through today, tomorrow, and Wednesday, if witnesses are still waiting to be heard; at the conclusion of which we intend to view the physical properties and locations which have been discussed.

The witnesses scheduled for appearance at these hearings, so far, are as follows:

1. Robert L. Minckler, president, General Petroleum Corp. and director of Western Oil & Gas Association.

2. Stark Fox, executive vice president, Oil Producers Agency of California;

3. D. B. O'Neill, executive vice president, Independent Refiners' Association of California;

4. L. R. Seaman, president, Intex Oil Co., and president, San Joaquin Valley Oil Producers Association;

5. Dan J. McGanney, vice president, Southern Pacific Co.; president and representative of Southern Pacific Pipe Lines, Inc.;

6. J. Grant Spratt, president, Trans-Mountain Oil Pipeline Co., Vancouver, British Columbia;

7. Frank G. Miller, professor, petroleum engineer, Stanford University, Palo Alto, Calif.

Now, I say to all concerned that the subcommittee is willing to hear from every person having information bearing upon this subject; not, of course, to repeat what has already been presented to the subcommittee, but to have the benefit of the views of interested and informed people on the west coast who may assist the Congress in arriving at a sound judgment in the matter upon which this subcommittee is directed to report to it.

By way of background I may say to you that an inquiry of this general nature was conducted in the 80th Congress pursuant to resolution of the House. But the factual situation since that time has changed, we may assume, materially since the war. Our question, therefore, is whether, in the condition of things as they stand now, there is need for additional pipeline facilities from the Texas and central western fields and perhaps other sources to the west coast, for any burden that might be placed upon the economy and resources of that area in a national emergency.

The subcommittee is desirous of obtaining all of the facts from informed sources so that there may be assembled in one place a source of information on this subject which will assist the Congress in arriving at an adequate and fair judgment of the problem as it exists.

With that in mind, any person or organization having information which would be of interest to the subcommittee, is invited to contact our staff and arrange for presentation of that material. That is an open invitation.

The public has been uniformly cooperative with the subcommittee in its inquiries, and of course we trust that this inquiry will be no exception to that rule. We recognize that much of this discussion relates to economics and to technical and scientific matters as well, and, therefore, we desire to draw upon information available in these categories, so that the findings of the subcommittee may be of value because fortified by a thorough factual background.

Let me also state that the subcommittee has no preconceived notions and has not prejudged nor predetermined any portion of this subject. We approach the whole subject with an open mind to make a thoroughly objective study.

I think I should state that both Mr. Rivers and myself were members of the Petroleum Subcommittee of the Committee on Naval Affairs which made a study of pipeline transportation and the movement of petroleum products in 1943 during the 78th Congress. It may be interesting to note during that time and in that report, on page 13, we made the following unanimous recommendation:

It is urged that the responsible Government agencies be on the alert to guard against the occurrence of a situation on the west coast such as took place on the east coast in the past winter and spring. In such connection, it is recommended that the Petroleum Administration for War investigate the feasibility and desirability of constructing a crude-oil pipeline from the oil-producing regions of Wyoming to the refineries in the vicinity of Spokane, Wash.; a products pipeline from central California north to the Columbia River; and a crude-oil pipeline from the west Texas and New Mexico oil fields to the Los Angeles refinery area, and report the results of such inquiry to this subcommittee.

With that background and this information we are ready to proceed with the hearings.

However, at this time I want to call the subcommittee's attention to a telegram which has just been received from former Senator Ernest W. McFarland, now Governor of Arizona, in which he requests thusly:

Hubert Merryweather, who is assistant official representative of the State of Arizona on the Interstate Oil Compact Commission, of Tumacacori, Ariz., is desirous of appearing before your subcommittee holding hearings in Los Angeles on the question of sufficiency of supply of oil on the coast and in Arizona in the event of war or emergency. Would appreciate your accommodating Mr. Merryweather if at all possible.

Mr. Courtney has already replied to that telegram and has invited Mr. Merryweather to appear this afternoon after the last witness or tomorrow morning, at his convenience.

Now, the first witness this morning, and in the order in which I named them, will be Mr. Robert L. Minckler.

Mr. Minckler, are you present?

Mr. MINCKLER. Yes.

Mr. HÉBERT. Will you please take a seat at the table?

Mr. COURTNEY. Mr. Chairman, may I interrupt a moment?

Mr. HÉBERT. Mr. Courtney.

Mr. COURTNEY. For the convenience of the press and so many of the technical and trade journals and other informational media that are interested in this hearing, copies of the text of the chairman's statement and of the prepared statement of Mr. Minckler and other information in reasonable quantities are available for you here.

Mr. HÉBERT. All right, Mr. Minckler, you may proceed.

STATEMENT OF ROBERT L. MINCKLER, PRESIDENT, GENERAL PETROLEUM CORP., AND DIRECTOR OF WESTERN OIL & GAS ASSOCIATION

Mr. MINCKLER. My name is R. L. Minckler. I am president of the General Petroleum Corp. I am appearing for the Western Oil and Gas Association, of which I am a member of the board of directors.

Western Oil and Gas Association is the oldest and largest petroleum trade association in the West. Its member companies account for approximately 80 percent of the crude oil produced in California and a like percentage of the refining capacity in the State.

Mr. RIVERS. May I interrupt right there, Mr. Chairman?

Mr. HÉBERT. Mr. Rivers.

Mr. RIVERS. What percentage of the explorations?

Mr. MINCKLER. Well, that is a difficult question to answer.

Mr. RIVERS. Roughly 25 percent?

Mr. MINCKLER. Oh, no, considerably in excess of that.

Mr. RIVERS. Yes.

Mr. HÉBERT. All right, continue.

Mr. MINCKLER. Our association appreciates the opportunity of appearing before your committee on the subject of a Texas-California crude oil pipeline. Further, we appreciate your decision to hear us in Los Angeles and your time and effort involved in doing so.

I should like to have the position of our association in this matter clearly understood. The association takes no position as a normal thing in matters concerning construction projects, supply and demand of petroleum products, and economic effects. If the promoters of this line were to construct the line from Texas to Los Angeles as a normal business operation, our association would take no position either in favor of the project or opposed to the project. At the present time a pipeline is being constructed between west Texas and the Los Angeles basin. It is a products line through which oil products will be moved from Texas and from southern California into Arizona. Our association has not even discussed this project.

There are at the present time pipelines between Texas, New Mexico, and California, through which 1,400 million cubic feet per day of natural gas comes into the California market. These gas lines bring in heating values equal to approximately 250,000 barrels of oil per day. Our association did not even discuss these lines.

What we are opposed to in the project you are considering is that the line is to be subsidized by the Federal Government. This is, we believe, an improper and wasteful use of public funds.

The justification for Government subsidy is supposed to be that there is a shortage of crude oil in this area and that in the event of war there would be an extreme emergency created, due to a shortage of crude oil in this area. Neither of these statements is true.

I should like to file with your committee a series of charts which I will run through and summarize, which have been prepared to bring into focus a considerable volume of statistics and other facts pertinent to our past, present, and future supply-and-demand situation in the Western States on both a peacetime and wartime basis. These charts are in front of you.

Chart I (exhibit 1) is a map of this part of the country. It shows the location of oil-producing areas, oil-refining centers, and transportation facilities for the movement of oil and gas into the Western States. The refining centers of Vancouver, British Columbia; Salt Lake City, Utah; and the oil-producing areas and oil-refining centers of California have been long established. Except for these, everything on the map is new since World War II, representing an enormous expenditure of money and effort in the performance of our public duty.

Since World War II the population of this area has increased at very rapid rates and in very large numbers. The demands for energy have increased at even greater rates. Despite this, there has been no shortage of oil products in this area, and the requirements of the people have been satisfied. This has been made possible by increases in local production and by the transportation and refining projects shown on the map.

I should like to describe these projects as they appear on the map, starting from the north.

You will note the long dashed red line, starting at the Peace River country in British Columbia, extending south into Washington and Oregon, thence east and southeast through Idaho, Wyoming, and Utah, Colorado to the San Juan Basin of New Mexico, with stub lines leading to Spokane, Wash., and San Francisco, Calif. This is the gas-line project of the Pacific Northwest Pipe Line Corp., Westcoast Transmission Co., and the El Paso Natural Gas Co., which will bring gas into this area from the large reserves in the Peace River and San Juan Basin areas.

Mr. RIVERS. Under construction? That is under construction?

Mr. MINCKLER. It is authorized. I am not certain whether it is under construction or not.

The next project shown on the map is the Trans-Mountain oil pipeline, which transports crude oil from the Alberta oilfields near Edmonton to the Puget Sound area.

Next is the Puget Sound refining area, which is being newly developed, with additional refining capacity in the older Vancouver, British Columbia, refineries, a new refinery at Kamloops, British Columbia, a new refinery now operating at Ferndale, Wash., a new refinery now under construction at Anacortes, Wash., and a new refinery planned for Tacoma, Wash.

The next item is the Yellowstone pipeline, a products line leading from the refining center of Billings, Mont., to Spokane, Wash.

Next is the Salt Lake pipeline, a products line leading from the refining center of Salt Lake City through southern Idaho to Spokane, Wash.

Next is the Pioneer pipeline, a products line leading from the refining center of Sinclair, Wyo. to Salt Lake City, Utah.

Next is the crude oil line from western Colorado to Salt Lake City.

Next are the El Paso Natural Gas Co. lines leading from west Texas and New Mexico into California.

Next is the Southern Pacific Pipe Line Co. products line from the refining center of El Paso, Tex. to Phoenix, Ariz. and the products line from Los Angeles area to Phoenix.

As I said, these are all projects which have been undertaken since the close of World War II for the purpose of increasing the supply of hydrocarbons in the Western States. None of these have been built or operated by Government subsidy. They represent the normal operations of private, competitive enterprise.

I should like now to discuss the effect of these and other projects upon the supply position in the Western States.

Please refer to chart II (exhibit 2) which shows the increase in crude-oil production and crude-oil reserves of California since the close of World War II.

The increase in production of crude oil and natural gas liquids in California since 1946 has been 136,000 barrels per day, or 15 percent. During the same period the proved reserves of crude oil and natural gas liquids have been increased 593 million barrels, or 16 percent. There has been no deterioration in our reserve position as related to our current production position.

We believe that the present rate of crude oil production in California can be maintained for a considerable period of time. It is believed that our offshore reserves, which can now be developed under new Federal and State legislation, will be important sources of future

crude oil production. It is believed that the possibilities of increased crude oil production in California by secondary recovery methods are great. There is some crude oil production in Nevada and Utah. There are possibilities in all of the other States in the area. We believe that an aggressive exploration program in this area will uncover additional reserves.

Our conclusion, based upon an intimate knowledge of local conditions, is that the present rate of crude oil production in the Western States can be continued for a long time to come.

Please refer to chart III (exhibit 3) which shows the details of other increases in hydrocarbon supplies in the Western States since World War II.

The bar at the top of the chart shows the increased refining capacity in Utah since World War II, amounting to 52,000 barrels per day. This affects west coast supply and demand balance in two ways: It eliminates the necessity of shipping from coastal refining centers into the interior regions. Through the Salt Lake pipeline it makes products available for southern Idaho, eastern Oregon, and eastern Washington.

The next part of the bar at the top of chart III shows the 40,000 barrels added products pipeline capacity into the Western States through the Yellowstone pipeline from Montana, and the Pioneer pipeline from Wyoming. Thus, there has been added potential supply capacity, amounting to 92,000 barrels per day, with the Rocky Mountain area of the United States as the source of supply.

The next bar on chart III shows the crude oil imports from overseas into the Western States, which in 1954 amounted to 48,000 barrels per day.

The next bar on chart III shows the capacities of the Trans Mountain Pipe Line from Alberta to the Puget Sound area. This line is currently supplying more than 50,000 barrels per day crude oil for refineries in the British Columbia area. Prior to construction of this line, this market was supplied principally by California crude oil and products, so this increases the supply available in the Western States.

The Trans Mountain Pipe Line is currently supplying 27,000 barrels per day to the refinery at Ferndale, Wash., and 17,000 barrels per day has been nominated for the month of July for the initial supply of the refinery now under construction at Anacortes, Wash. The total nominations for movement through the Trans Mountain Pipe Line for the month of July 1955 amount to 101,000 barrels per day. There is at present a totally installed capacity through the Trans Mountain Pipe Line of 150,000 barrels per day and an additional 150,000 barrels per day is available by adding pump stations on the line. There are adequate crude oil supplies available from the Alberta oil fields for operation of this line at capacity.

Thus, the actual and potential increase in supplies available through installed facilities since World War II amounts to 426,000 barrels per day, made up of increase in California production of 136,000 barrels per day; increased availability of crude oil and products from the Rocky Mountain area 92,000 barrels per day; crude oil imports from overseas 48,000 barrels per day; and capacity of Trans Mountain Oil Pipe Line 150,000 barrels per day.

An extremely important increase in hydrocarbon supply for the Western States has been the import of natural gas from Texas and New Mexico. This is shown on the bar at the bottom of chart III, and at present amounts to the equivalent of 250,000 barrels per day of petroleum.

Chart IV (exhibit 4) shows the amplification of pipeline transportation into the Western States which are currently handling most of the new supplies shown on chart III. All of these projects are new since World War II, and chart IV shows how they can be increased or converted to make possible a still greater movement of supplies.

The first bar on chart IV shows the Trans Mountain Crude Oil Pipe Line. It has a present capacity of 150,000 barrels per day. This can be increased, as I said, to 300,000 barrels per day.

In connection with the increase in refining capacity in the Utah area, the capacity of crude oil pipelines from Colorado to Utah has been increased by 45,000 barrels per day. This is shown in the center bar on chart IV.

At the bottom of chart IV is shown the effect, actual and potential, of the new products lines built since World War II. The products lines from Salt Lake City to the Pacific Northwest have a capacity of 42,000 barrels per day. The Yellowstone line from Montana to Washington has a potential capacity of 30,000 barrels per day. The products line now building from Texas to Arizona has a capacity of 13,000 barrels per day. The line now under construction from Los Angeles to Phoenix, Ariz., could be reversed in case of an emergency, and its total capacity of 30,000 barrels per day could be used westward.

The industry, without Government subsidy, can increase the pipeline movement of oil into the Western States on short notice by a total of 447,000 barrels per day over World War II levels.

There is not much use of bringing additional crude oil into California unless it can be refined, and the refinery capacity situation in the Western States is shown on chart V (exhibit 5).

The total west coast refining capacity as of January 1, 1955, is 1,235,000 barrels per day, divided as follows: southern California, 700,000 barrels per day; San Francisco Bay, 400,000 barrels per day; other California areas, 100,000 barrels per day; Washington, 35,000 barrels per day.

An additional 100,000 barrels per day is now under construction, or plans have been announced. Of this, 60,000 barrels per day is in Washington, 30,000 barrels per day in Hawaii, and 10,000 barrels per day in southern California.

Let us look at the situation of the southern California refineries. The capacity of these refineries is 700,000 barrels per day. Operating at 93 percent of capacity, which is about the maximum, considering necessary down-time for repairs, the throughput would be 650,000 barrels per day. The present supply for these refineries is as follows: Los Angeles basin crude oil production, 325,000 barrels per day; pipeline receipts from other California producing areas, 200,000 barrels per day; ocean movements from other California points and from overseas, 100,000 barrels per day. This is a total of 625,000 barrels per day related to an operating capacity of 650,000 barrels per day.

If ocean movements were minimized under war conditions, there would be available to southern California refineries the Los Angeles

basin crude oil production of 325,000 barrels per day and a pipeline movement from other California production areas at capacity of 315,000 barrels per day, leaving room for only 10,000 barrels per day of ocean movements in the total capacity of 650,000 barrels per day. This shift from ocean movements to pipeline movements could be accomplished by using already existing capacity of pipelines from producing areas into the Los Angeles Basin.

With the background we now have of information as to crude oil production, transportation, and refining capacities, we are now able to look at the supply and demand situation in the five Western States on a peacetime basis for the year 1961, which is arbitrarily selected as representing some time in the future. This is shown on chart VI (Exhibit 6).

The estimate for 1961 demand is shown in the bar at the bottom of chart VI. We expect that the domestic civilian demand at that time will be 1,200,000 barrels per day. Export demand will be 70,000 barrels per day, and the military demand is included at the present level of 120,000 barrels per day. The total demand is expected to be 1,390,000 barrels per day.

The most economical sources of supply for this demand are shown in the center bar on chart VI. These include California crude oil production of 1 million barrels per day, the present level; 240,000 barrels per day crude oil through the Trans Mountain Pipeline from the Canadian oil fields; 70,000 barrels per day products supply coming from other States through products pipelines; and 80,000 barrels per day production of natural gas liquids in California.

Our refinery capacity situation is shown in the bar at the top of chart VI. We have a total capacity of 1,335,000 barrels per day. Operating at 93 percent of capacity, these refineries will process an average of 1,240,000 barrels per day, allowing for necessary downtime for repairs. This capacity balances with our crude oil availability from local production and the amount available through the Trans Mountain Pipe Line.

Our conclusions are that California and Canadian crude oil supplies, transportation facilities, and refining capacities are adequate to meet all peacetime demands through 1961. Additional supplies of crude oil from west Texas are not needed, and if the proposed pipeline were built it could be expected to transport crude oil in large volumes.

There remains to be considered the situation which would probably exist on an all-out wartime basis, and we show on chart VII our conclusions concerning this.

The bar at the top of chart VII (exhibit 7) shows the supplies available without any allowance whatever for overseas imports. We would have 1 million barrels per day of California crude oil production. We would have 240,000 barrels per day available through the Trans Mountain Pipe Line. We would have 85,000 barrels per day of other California raw materials—natural gas liquids. We would have 75,000 barrels per day products from other States through existing pipelines.

These last two items are slightly larger than the amounts included for peacetime operations, because we would expect that light products now burned in refineries or injected into oil fields would be used for war demands, and imports of special products would be increased.

And we could have an additional 138,000 barrels per day crude oil from Elk Hills Naval Reserve. This would give us a total supply without any overseas imports of 1,538,000 barrels per day.

Our refinery capacity is sufficient to run our California crude oil production and the amount available through the Trans Mountain Pipe Line. We do not have refinery capacity to run the Elk Hills Naval Reserve crude oil, and do not have any refining capacity to run extra west Texas crude oil.

The bar at the bottom of chart VII shows the civilian domestic demand we would anticipate under wartime conditions with rationing in effect. We would expect this to be approximately 860,000 barrels per day. We would expect that it would be necessary to continue exports in the amount of 50,000 barrels per day. This would leave available to the military 490,000 barrels per day, which is limited by refining capacity and not by crude oil supply. This availability of products for the military is substantially in excess of deliveries made to the military in World War II.

We of course have no opinion as to whether this availability of 490,000 barrels per day will be adequate to meet military requirements, but it is obvious that any military demand in excess of this amount must be met not from additional crude oil from a pipeline from west Texas, which could not be refined, but from refined products brought into the Pacific Ocean area in the proportions dictated by unsatisfied military demands.

Our conclusion is that a crude oil pipeline from Texas to California will serve no useful wartime purpose.

The last chart VIII (exhibit 8) is the concluding summary of the increases in hydrocarbon supply in the five Western States since World War II on a current basis, on a future peacetime basis, and on a wartime basis.

On a current basis, we have the additional supply through the Trans Mountain Oil Pipe Line at the July 1955 nominated rate of 101,000 barrels per day. For the future peacetime or future wartime basis this could be increased to 300,000 barrels per day. We have in all cases 12,000 barrels per day additional supply through the Pioneer Pipe Line from Wyoming to Utah.

The Yellowstone Pipe Line from Montana to Washington was being built in 1954 and there were no movements. For the future peacetime and wartime basis it will have a capacity of 30,000 barrels per day.

The Southern Pacific Pipe Line between Texas and California is now under construction. On a future peacetime basis, it will move 13,000 barrels per day products from Texas to Arizona. This could be increased by steps, as needed, to 48,000 barrels per day on a wartime emergency basis. We have included it at a probable rate of 30,000 barrels per day.

The Salt Lake City refining capacity has been increased by 52,000 barrels per day, backed up by additional crude oil receiving capacity and products pipeline delivery capacity.

California production of crude oil and natural-gas liquids have been increased by 136,000 barrels per day. On a wartime basis, this could be increased an additional 138,000 barrels per day by opening the Elk Hills Naval Reserve. The total increase in petroleum supply capacity on a current basis since the close of World War II amounts to 301,000

barrels per day compared with an increase in total demand of 257,000 barrels per day. On a future peacetime basis, the increased supply capacity over World War is 543,000 barrels per day compared with an increase in demand of 492,000 barrels per day.

On a wartime basis, increased installed capacity of supply over World War II is 718,000 barrels per day. The total increase in demand limited as it is by refinery capacity is to be only 502,000 barrels per day.

The percentage increase in demand since World War II for each of these three cases does not look very large. This is because a substantial part of the increase in energy requirements in our area has been taken over by imports of natural gas into this area and it is expected that this movement will continue to increase.

It seems to us from the facts which we have given that the conclusion is inescapable that the construction of a crude oil line from Texas to southern California is a project which is not economically sound under peacetime conditions, and will serve no useful purpose in wartime. It is certainly not deserving of a Government subsidy.

As we see the future, the bottleneck in west coast capacity is not in crude oil supply or in crude oil transportation facilities, but it is in refining capacity.

I have dealt so far with definitely tangible things, pipelines and refineries in actual operation, actually under construction and definitely planned.

As a guess for the future, I am sure that the tight refinery capacity situation indicated will not happen. I am sure that additional capacity will be built. I am also almost equally sure that that building will be in the Pacific Northwest. In that area is a large market now principally supplied by tanker movements from California refineries. Only 700 miles away, through a pipeline already built, is a secure crude oil supply. That is the ideal place in which to build refinery capacity, where the logistics of supply and demand are ideal.

I do not see how Texas production can expect to capture that market, with a total haul of 2,500 miles against a haul of 700 miles.

The development of a Northwest refining industry is an important military project. At the right size, it eliminates the exposed tanker movements from California to the Northwest. It disperses refining capacity, instead of concentrating it in the Los Angeles Basin, which would be the case if Texas crude were to come into this area.

I believe that these considerations will be very persuasive to oil refiners when they plan future expansion, and I believe that they will adopt the natural course instead of a clumsy one.

Mr. HÉBERT. Thank you very much, Mr. Minckler.

Let me make this observation in connection with your statement and the continued use of the word "subsidy."

The committee has been informed that there is no provision in law for subsidizing any pipeline and that there is no such thing contemplated or proposed as a subsidy for any crude-oil pipeline.

The committee was very persistent in making inquiry of Dr. Arthur Flemming, the head of the Office of Defense Mobilization.

As the committee understands it, the type of certificates which could be issued are:

1. A certificate of necessity, which carries with it the favorable amortization of the initial cost of the line over a certain period for

tax purposes, and also carries with it the priority rights for critical materials, which, of course, at this particular time is a moot question, as there is no such thing as critical materials in peacetime.

2. A certificate of essentiality, which would mean that the Government would either lend the money at the proper rate of interest or guarantee the loan for the construction, but under cross-examination, Dr. Flemming insisted repeatedly that there is no such thing as a subsidy; in other words, where the operator of such a line, building under the so-called certificate of essentiality, would be guaranteed X number of dollars for its operation.

So I just wanted to make that clear at this particular time.

Is that your understanding?

Mr. MINCKLER. That is my understanding of what is involved. Perhaps the word "subsidy" was an unfortunate one. I am meaning a guaranteed Government loan.

Mr. HÉBERT. But the Government is not putting up money for any pipeline. They are not now.

And No. 2, the committee is not interested in the construction of a pipeline by private individuals, as such, as an economic and a practical thing. The committee is only interested and only has cognizance of the necessity of such a line for military purposes.

It becomes obvious that the committee is the Committee on Armed Services, and has cognizance in that area. And our only interest in making this inquiry is not to determine the economic feasibility of the construction of a pipeline from the west Texas field to California, but the military necessity of so constructing such a pipeline. And if that is found to be a fact, that the military does need the pipeline, well, obviously the committee would recommend it.

If the military would recommend that the pipeline is not needed for military purposes in the defense of this country in the case of a war, then it so follows that obviously the committee would reject the proposal, since our cognizance and our interest and our concern is specifically the military necessity in the defense of the country.

Now, I want to read you a statement of a press release that was just handed to me. And for release, incidentally, at the same time this committee is sitting on the subject. I assume it is a coincidence. It comes from Standard of California and reads as follows:

T. S. Petersen, president of Standard Oil Co. today—

that is today—

announced plans for expansion of west Texas pipeline facilities to a 20-inch line, with an ultimate potential capacity of 220,000 barrels of crude oil daily delivered to El Paso.

Petersen explained that in emergency the expanded line could make crude oil available to be shipped to California over the Southern Pacific Pipe Lines, Inc., petroleum products line now under construction.

The Southern Pacific Pipe Lines route will run from El Paso to Phoenix and from the Los Angeles Basin to Phoenix. Petersen pointed out that in an emergency the flow over the Los Angeles-Phoenix link could be readily reversed so the crude oil could flow directly into southern California.

Petersen said a Standard subsidiary, Paso-Texas Pipe Line Co., will begin construction of the first stage immediately, at a cost of several million dollars. This will consist of substituting a 20-inch line on 70 miles of the existing 195-mile system running from Wink to El Paso. It now has two paralleling 8-inch lines. The initial project will increase deliveries of crude to El Paso by 10,000 barrels to 55,000 barrels daily. Thereafter, Petersen said Paso-Texas can quickly convert the remaining section to 20 inches and make 220,000 barrels

daily available to El Paso. In the event of emergency, he said, it would be a relatively simple matter for Southern Pacific Pipe Lines, Inc., to change over to the transportation of crude oil all the way to Los Angeles.

The outstanding feature of this arrangement would be its flexibility to meet sudden emergencies. With crude available in large amounts in El Paso through the Paso-Texas line, it also would be relatively easy to lay another 20-inch line from the Texas border to southern California. This could be done in 90 days if necessary.

Did you know about that statement, Mr. Minckler?

Mr. MINCKLER. I saw that statement this morning, too.

Mr. HÉBERT. It was the first time you saw it?

Mr. MINCKLER. I hadn't heard about it.

Mr. HÉBERT. You had not heard about it?

Mr. MINCKLER. No.

Mr. HÉBERT. Do you care to make any comment on it at this time?

Mr. MINCKLER. I think that is quite consistent. The Standard Oil Co., as I understand, is increasing the capacity of their El Paso refinery, and they are now arranging for a crude-oil supply into that area.

As I said in my statement, the line now under construction by the Southern Pacific between Los Angeles and El Paso could be reversed in case of war, if it were necessary to bring products out here.

Mr. HÉBERT. Well, according to your statement, your position is that it is not necessary in time of war, if I read what you just testified to.

Mr. MINCKLER. My statement is that the crude oil with our present refining capacity—the crude oil could not be run in California, and I don't believe that Mr. Petersen's statement has any particular significance in that.

Mr. HÉBERT. Well, his statement recognizes the possibility of wartime use.

Mr. RIVERS. Conversion.

Mr. HÉBERT. Or conversion. He goes out of his way. That is the only thing he makes in his statement in quotes, is about the ability to convert in case of war. He makes a very strong point, whereas you in your statement, you say, "and will serve no useful purpose in wartime."

Mr. MINCKLER. That is correct.

Mr. HÉBERT. You take an absolutely diametrically opposite view to what Mr. Petersen said. That is why I asked you for comment. You don't think it will serve any use in wartime and Mr. Petersen makes a very strong and urgent appeal for the building of this in that it is an adjunct to the war emergency if such an emergency would arise.

Mr. MINCKLER. I don't see how you could use another 220,000 barrels of crude oil out here. You couldn't possibly run it into the refineries. I don't agree with Mr. Petersen's statement.

Mr. RIVERS. Despite the fact you represent him?

Mr. MINCKLER. What?

Mr. RIVERS. Despite the fact you represent him?

Mr. MINCKLER. I don't represent——

Mr. HÉBERT. You don't represent Mr. Petersen?

Mr. MINCKLER. I don't represent Mr. Petersen.

Mr. HÉBERT. No.

Mr. RIVERS. You represent the association.

Mr. MINCKLER. The Western Oil & Gas Association.

Mr. RIVERS. That is what I am talking about.

Mr. MINCKLER. Yes.

Mr. RIVERS. You are speaking not as the head of any company but for the association.

Mr. MINCKLER. Yes.

Mr. RIVERS. You do represent them?

Mr. HÉBERT. Did Standard Oil Co., or Mr. Petersen, advise you of the intent to construct this line?

Mr. MINCKLER. No.

Mr. HÉBERT. This came as a surprise to you?

Mr. MINCKLER. Yes.

Mr. HÉBERT. It is amazing how certain things happen, when things happen in Washington.

Mr. Rivers.

Mr. RIVERS. Are you familiar with what the military would require in time of war?

Mr. MINCKLER. No; I am not.

Mr. RIVERS. Would you favor a products line linking southern California area with El Paso Permian basin area?

Mr. MINCKLER. Such a line is being built now, Mr. Rivers.

I would like to make my position clear on this, that I am not opposed to anybody building a pipeline anyplace.

Mr. RIVERS. We are not talking about economics.

Mr. MINCKLER. Yes.

Mr. RIVERS. Don't let's discuss economics.

Mr. MINCKLER. No.

Mr. RIVERS. You can prove anything on economics. So don't let's discuss that.

Mr. MINCKLER. Yes. I am not sufficiently informed as to what products are available in west Texas, which are surplus and which could be moved for the war effort here.

Mr. RIVERS. Assuming that this area would be damaged by a bomb destruction, would you favor a standby products line to this area from the Permean Basin area?

Mr. MINCKLER. As a Government military project?

Mr. RIVERS. As an immediate transportation medium to which you could turn?

Mr. MINCKLER. I think that that would be a matter that would be entirely up to the military, as to what they consider.

Mr. RIVERS. Say the military come to you and say, "Our plan shows that we believe Los Angeles will be hit by nuclear weapons," would you then favor a standby-products line?

Mr. MINCKLER. I would.

Mr. RIVERS. Of what capacity?

Mr. MINCKLER. As large as it could be built.

Mr. RIVERS. As large as it could be built.

Mr. MINCKLER. Because if the refineries of California, that is, of southern California, are bombed out, then we certainly are going to need a lot of products in this area and we will have no use for crude oil.

Mr. RIVERS. Have no use for crude oil. Therefore, a medium of transportation capable of delivering to you in there now—hydrocarbons, I think you refer to it in the trade——

Mr. MINCKLER. Yes.

Mr. RIVERS (continuing). Would be recommended by you?

Mr. MINCKLER. Well——

Mr. RIVERS. Don't discuss economics.

Mr. MINCKLER. No. But you are asking my advice as a military person?

Mr. RIVERS. Yes.

Mr. MINCKLER. And I have no——

Mr. RIVERS. No, sir; I am talking about it as a transportation medium.

Mr. MINCKLER. It is an economical way of getting supplies into an area. There is no question about it.

Mr. RIVERS. And would you count on any bottoms coming in here from any source in time of war?

Mr. MINCKLER. Well, again, that is a military problem. I don't know what defense we could have—it depends upon the extent of defense.

Mr. RIVERS. Would you count on any of them in time of war?

Mr. MINCKLER. Yes.

Mr. RIVERS. You would count on importation by tanker?

Mr. MINCKLER. Yes.

Mr. RIVERS. Do you know the availability now of surplus tankers?

Mr. MINCKLER. I know something of it. There are some surplus tankers.

Mr. RIVERS. Do you know how many there are?

Mr. MINCKLER. No.

Mr. RIVERS. Do you know how much it would cost to deliver a barrel of refined products from Houston to this area by tanker as compared with the costs of the delivery from the Permean Basin to this area by pipeline, the comparable cost?

Mr. MINCKLER. Pipeline I presume——

Mr. RIVERS. Don't you——

Mr. MINCKLER. This is a production figure.

Mr. RIVERS. Just round figures.

Mr. MINCKLER. I haven't seen the calculation. I think probably you could move the material from Houston into this area for 2 cents a gallon and the Permean Basin probably for a cent and a half.

Mr. RIVERS. Because you have to figure the turnaround cost, don't you?

Mr. MINCKLER. Yes.

Mr. RIVERS. Yes, sir. That is all for the time being, Mr. Chairman.

Mr. HÉBERT. Mr. Minckler, I want to call your attention on page 13 of your statement, in which you say this:

> As we see the future, the bottleneck in west coast capacity is not in crude oil supply or in crude oil transportation facilities but it is in refining capacity.

Wouldn't you say, then, that it would follow that if the oil was brought here, the refining capacity would be built to catch up with the production here or the delivery here, the importation here?

Mr. MINCKLER. Oh, no, that has no connection at all. You build refineries to serve markets, not to run——

Mr. HÉBERT. What is the bottleneck you are referring to, then?

Mr. MINCKLER. To the total overall capacity. You have to have balanced capacity, you have to have crude oil, transportation facilities, and refining capacity. We have surplus crude oil—we have crude oil capacity and transportation capacity in excess of our refining capacity.

Mr. HÉBERT. At the present time.

Mr. MINCKLER. At the present time.

Mr. HÉBERT. And your refining capacity is reflected only in the demand of the market.

Mr. MINCKLER. That is right.

Mr. HÉBERT. Mr. Hess.

Mr. HESS. So there is no need in your estimation today for additional refining capacity in the California area?

Mr. MINCKLER. Not at the present time. However, the figures showed that in the year 1961 the crude oil—the product demand and the refining capacity would be just exactly in balance. Well, that never happens. The industry always builds surplus refining capacity.

Mr. HESS. You say that by 1961, that is?

Mr. MINCKLER. Yes.

Mr. HESS. That is contemplating, of course, the construction of additional refineries between now and 1961.

Mr. MINCKLER. No.

Mr. HESS. With the present refinery capacity——

Mr. MINCKLER. Will last us through 1961.

Now, we never will run that close. We will build additional refining capacity.

Mr. HESS. Mr. Minckler, do I understand your association stand on the matter of pipelines into this area—that you are not interested at all if a pipeline is constructed by private individuals?

Mr. MINCKLER. That is right.

Mr. HESS. In order to bring either products or crude into this area?

(Mr. Minckler nods.)

Mr. HESS. That is an economical matter insofar as they are concerned?

Mr. MINCKLER. That is right.

Mr. HESS. And you feel that, of course, they wouldn't venture the expenditure of capital unless they determined it was absolutely necessary to bring it in?

Mr. MINCKLER. That is right.

Mr. HESS. And your objection is to the Federal Government guaranteeing either the loan or making the loan direct to the company to construct the line?

Mr. MINCKLER. That is right.

Mr. HESS. Would you have any objection whatsoever if the Department of Defense decided to construct a line from the fields into this area?

Mr. MINCKLER. None at all.

Mr. HESS. Do you know whether or not the lines that you mentioned in your statement, such as those coming down from Canada and from Salt Lake City and from other areas, were granted certificates of necessity in order to construct those lines?

Mr. MINCKLER. I believe they were.

Mr. HESS. They were?

Mr. MINCKLER. Yes.

Mr. HESS. So they did have a tax relief or amortization on all of those lines?

Mr. MINCKLER. Yes.

Mr. HESS. There were no certificates of essentiality granted, however?

Mr. MINCKLER. None.

Mr. HESS. Is the refinery capacity in the Northwest section—in Washington and Oregon—sufficient to take care of the supply of crude that will come down from the Canadian fields?

Mr. MINCKLER. No; it is not.

Mr. HESS. Do they contemplate building additional refinery capacity there?

Mr. MINCKLER. The only ones that I know of are the ones that I mentioned. That is our plant at Ferndale, Wash.—that is, my company's plant at Ferndale, Wash.—the Shell plant at Anacortes, and the Pacific Oil Co.'s plant at Tacoma. The Standard Oil Co. has land up there for a refinery. But I don't know of any actual plans that any of them have for building additional capacity.

Mr. HESS. You mentioned, of course, in your statement that in the event of emergency or event of war how you could increase the supply of crude.

Mr. MINCKLER. Yes, sir.

Mr. HESS. You would increase the supply of crude, but then you would have no refineries to refine it.

Mr. MINCKLER. Not in the Pacific Northwest at the present time. Later on——

Mr. HESS. Nor in this area—the Los Angeles area—if it came from Elk Hills?

Mr. MINCKLER. You would have a total capacity to run either Elk Hills or Canadian oil up to a certain limit, but you couldn't run both of them in the amounts that they would make available.

Mr. HESS. Do we have any guaranty at all that Canada would permit us to have all of the oil that is produced in those fields?

Mr. MINCKLER. Well, I would hate to think that there would ever be a circumstance where Canada and the United States wouldn't be very friendly, and particularly in war. I think our resources would be theirs and their resources would be ours.

Mr. HESS. She may need it for her own defense, though.

Mr. MINCKLER. She has no use for it in that particular part of the country.

Mr. HESS. She has no refinery capacity up there?

Mr. MINCKLER. No.

Mr. RIVERS. Nor transportation out?

Mr. MINCKLER. Not for the volumes which could be produced.

Mr. MILLER. Mr. Chairman.

Mr. HÉBERT. Mr. Miller.

Mr. MILLER. As I get it, Mr. Minckler, the refining capacity at the present time is the bottleneck in the whole picture as far as California is concerned?

Mr. MINCKLER. That is correct.

Mr. MILLER. That is all.

Mr. RIVERS. Mr. Chairman.

Mr. HÉBERT. Mr. Rivers.

Mr. RIVERS. And you think the additional need for heating capacity as implemented by the gas line importation of that hydrocarbon element is necessary for the increase in consumption?

Mr. MINCKLER. That has been our experience.

Mr. RIVERS. Or potential consumption?

Mr. MINCKLER. That has been our experience, Mr. Rivers; that that has been the biggest single item that we had. And it is going to be bigger.

Mr. MILLER. Mr. Chairman.

Mr. HÉBERT. Mr. Miller.

Mr. MILLER. Is there any record of the shift of the use from oil to gas in the industries of this country? Is that trend completed, do you think, or will it continue on?

Mr. MINCKLER. Well, gas comes into this area at very large rates per day, and the gas demand is divided into several classifications. The first one which has high priority is the domestic home heating load. There is plenty of gas to take care of that at its peak in the winter. In the summertime there is surplus gas when the people are not using it for heating, and it is then used for industry.

It is hard to say just how much of the industrial load has been converted from oil. I think you have to treat it all as one common pot—of energy requirements which can be satisfied either by gas or by oil.

Mr. MILLER. Well, there are pure gas fields in California; are there not?

Mr. MINCKLER. Very few.

Mr. MILLER. Rio Vista field?

Mr. MINCKLER. Rio Vista and some of the Sacramento Valley fields.

Mr. MILLER. And there are explorations going on now to develop new pure supplies of gas that apparently look pretty good, some of them?

Mr. MINCKLER. Correct.

Mr. HÉBERT. Mr. Short.

Mr. SHORT. Mr. Minckler, you made a very interesting statement. You have given us many figures. It seems to me, however, that some of your conclusions are based upon rather erroneous and dangerous assumptions or postulates.

Now, you state that the most economic source of supply for—the demand out here would be the 1 million barrels daily, the present level of crude production in California 240,00 barrels daily of crude oil through the Transmountain Pipeline from the Canadian oilfields. I have before me from Mr. R. B. Toombs, the Economics Branch of the Department of Trade and Commerce, Ottawa, Canada, dated in April of this year, that tells us that Canada's total daily production of crude petroleum for the year 1954 was 262,000 barrels. This rate may rise to about 300,000 barrels per day as a yearly average during 1955.

He also tells us that—

> Canada's total daily demand for crude petroleum in the year 1954 was 464,400 barrels, and for liquid petroleum fuels the daily demand was 450,845 barrels. To this latter figure, the demand for other petroleum products, such as lubricating oils, cokes, waxes, et cetera, must be added to obtain the total product demand. Exact statistics on the demand for these products are not available at this time, but in general they amount to 7 or 8 percent of the liquid petroleum fuels demand.

Now, according to his figures, the demand, the daily demand in Canada is far in excess of her production and that Canada's daily imports of crude petroleum in 1954—only last year—averaged 215,814 barrels and products imports averaged 95,262 barrels per day.

The truth of the matter is that right on this July day, 1955, Canada is producing about 300,000 barrels of crude oil and her daily demand is approximately 540,000 barrels a day.

So how can the west coast depend upon the importation of oil in the immediate future if these figures are anything like correct—and I take it that they are, because Mr. Toombs from the Department of Trade and Commerce in Canada, at Ottawa, in this letter dated April 14, 1955, says, in addition to what I have read:

Canada's total daily exports of crude petroleum in 1954 were 6,425 barrels—

not the 240,000 barrels you mentioned, evidently talking of potential possibilities at some remote future date.

The truth of the matter is Canada's total daily exports of crude petroleum in 1954 were only 6,425 barrels.

Petroleum products exports amounted to 1,968 barrels. In the matter of potential exports, Canada does not expect any appreciable export market in petroleum products in the near future.

Regarding the potential import of petroleum exports, it had been anticipated at the beginning of this year that the average daily exports to the United States would be about 55,000 barrels in 1955, rising to the general range of 150,000 to 200,000 barrels, within a matter of a few years. Canada has a reserve production potential as evidenced by the fact that whereas the average daily production in 1954 was 262,000 barrels, the potential daily production had reached about 420,000 at the end of 1954. Some observers believe the industry potential will be at least 1 million barrels per day by 1960. While this department has no comment to make regarding the possible Canadian production in 1960, a number of estimates made by industry are in the general range of six hundred to eight hundred thousand barrels daily, with the emphasis being on the low side of this range.

So regardless of the potential possibilities and even accepting that we will never be cut off from Canadian source of supply—and though we have been neighbors for very many, many years and intend to continue to be and want to be, we have no absolute assurance or guaranty that in another global conflict all of that oil will come to the west coast. Canada will allot a lot for herself, and I imagine some of the oil up in Alberta will even be shipped to the east coast, rather than the west coast.

But according to the figures here from the Department of Trade and Commerce in Ottawa, Canada is not producing enough to meet her daily demands. And she is importing over 250,000 barrels a day of crude petroleum and 95,000 barrels of products.

Now, it is hard for me to reconcile these figures. It seems to me that you have arrived at some of your conclusions based upon the very false and dangerous assumption that there will be no interruption or deterioration in the production and the refining and the transportation out here on the west coast. If things will go on as they are now, in status quo—and your supply and demand are pretty well in balance, although you are importing fifty to sixty thousand barrels of crude oil right into California today; that is about your daily average of imports. You get most of it from Sumatra. You get some from the Near East. You get some from South America, perhaps, and a little from Mexico. But suppose we get in a conflict and this source of supply is cut off? The Nazis with 150 submarines sank 54 of our 59 tankers in the first weeks of World War II. We came dangerously near losing World War II, because the Atlantic was a sea of oil all the way from Norfolk to Miami. Those 54 of our 59

tankers were sunk by the Nazi submarines as they brought oil from Curacao and Aruba to our eastern seaboard.

Now then, when you have to bring oil these many thousands of miles from the far off Middle East or from Sumatra and with the Russians having, according to our best intelligence, a minimum of 350 submarines, of the snorkel type; fast moving and deep sailing, would we dare take the risk of importation of foreign oils from these remote places? Would we even want to transport crude oil or finished products by tankers from Houston, which to start with is 550 miles from the rich oil reserves and fields in west Texas, and then haul it almost 9,000 miles—8,700 miles—from Houston down through Panama, through the Panama Canal up to Los Angeles area; where we can ship it for 50 to 60 cents a barrel through a pipeline from west Texas to the Los Angeles area?

I am amazed when you say that a pipeline from west Texas to this area would be of no use or value in time of war.

How much west Texas crude did we bring into this area at the height of World War II?

Mr. MINCKLER. I think it was about 50,000 barrels a day.

Mr. SHORT. Yes, sir.

Mr. MINCKLER. For a few days.

Mr. SHORT. And we brought it by tanker, didn't we?

Mr. MINCKLER. Tank car.

Mr. SHORT. Tank car. I mean tank car. You brought it over the Southern Pacific, which is the only direct railroad you have from west Texas to California, or by the Santa Fe that winds up through New Mexico and Arizona and finally gets here. The transportation by tank car is very expensive and it is vulnerable to attack. And it cost about $4.29 a barrel to haul that, didn't it?

If we had a pipeline, or if we have a pipeline, we could have transported it quickly, cheaply, underground, invulnerable to attack, for about 50 to 60 cents a barrel. That pipeline would have almost paid for itself, even though it was late in World War II.

We know that the Big Inch and the Little Inch pipeline from the Southwest to the east coast did pay for themselves; that the Government sold them at a profit, and that it saved our neck. We never could have transported sufficient amounts of petroleum and petroleum products by other methods of transportation without those pipelines.

Now, this committee is interested, as the chairman has so well stated, not in profit motives and not in making money. We are interested solely in the defense and security of this Nation. We are interested in no particular company. We are interested in only seeing and making sure that should a bomb be dropped here in this restricted, congested Los Angeles area, that it would not lessen and reduce your refining capacity and supply of crude, but that it would wipe it out, annihilate it. Having flown over Hiroshima and Nagasaki, I think I can appreciate the utter devastation, even if it came from a little atomic bomb, and we have them 10 times more powerful today. And what scares the living lights out of me, although I live in Missouri, in the heart of America, and almost equidistant from both coasts and from the Canadian border to the gulf, I don't feel too secure even in the Ozarks, in the central part of the United States. But when I take a map of the United States and seeing all of these pipelines and gaslines running from Texas and Louisiana and Oklahoma to the north

and the east of the United States and then when I look at this west half of the United States and particularly when I come out here to your beautiful California and see this restricted, congested area here, where most of your refining capacity is—you can almost throw a rock and hit it. You know the area much better than I do. What one bomb would do to that.

Now then, if you are knocked out, your refining capacity and all, where in the world would we get sufficient supplies, petroleum supplies, to operate our fleet and our Air Force and our ground forces in the Pacific?

And remember, the real danger spot I think is the back door today. Because of the emphasis we placed on the Marshall plan, NATO countries, and help to the European nations, we have been inclined to neglect or overlook or forget or underestimate the true nature of the serious problem that we are confronted with out in this big pond.

If you should be knocked out here or up in the Puget Sound area—and we are not interested so much in that—we hope that Canada can supply a sufficient amount of products to take care of that area. But this is the vital area: San Diego, the base of our fleet, the San Diego-Los Angeles area, due to your enormous increase in population. With 60 million automobiles, with dieselizing all your railroads and heating your homes with oil, I am afraid that even some of the men in the industry as well as our military leaders are failing to appreciate the enormous demands that will be made upon the oil industry in case of another global war.

Sixty percent of all our tonnage that was shipped to Europe in World War II—men, food, clothing, equipment, tanks, ammunition—take the whole total tonnage and you will find that 60 percent of it was petroleum.

These modern jets eat this fuel up at simply a staggering, amazing rate.

So what this committee is interested in and concerned with is that in case of a global war we will have a pipeline bringing crude or bringing refined products here. And you can change, of course, a line from crude to the transportation of products, or vice versa, in a very short period of time. But unless that pipeline is ready there is to go in case of an attack, I don't know where in the world we would be in this country. And I am going to hate the enemy just as much if he comes from the west as if he would come from the east, north, or south of the United States. I think we have to count on a margin of safety here. That is all this committee wants to do.

You are going to have to have storage capacity, have an excess over your normal requirements out here, or you are going to have a pipeline or some method whereby you could get those materials in here and get them quickly, or else suffer a defeat.

I have talked too long. But those are the things that are worrying me.

I don't think we can count upon Canada here. The figures that were given me certainly don't gibe with the figures you have used, employed here in your computations.

Mr. MINCKLER. May I explain that?

Mr. SHORT. Yes.

Mr. MINCKLER. So far as the Canadian situation is concerned, your figures are, I believe, correct. But Canada is a very big country. Most of the demand for products in Canada is in the eastern part of Canada. Most of the refining capacity for Canada is in the eastern part of Canada.

Mr. SHORT. Just like it is in this country.

Mr. MINCKLER. That is right. There is no way to get Alberta oil east of Sarnia, Ontario, at the present time. There are no pipeline facilities to do that.

The most economical way of supplying Canada is the way in which it is being supplied, from the South America and Texas part of the United States.

However, that does leave this surplus of productive capacity which you mentioned, 420,000 barrels a day, which is available in Alberta for movement some place.

A pipeline has been built which can move it to the west coast.

Now, as to the tanker movements on this coast. My figures which I have presented include no crude oil to come into this area from the Middle East or from Texas or from South America. They depend upon the supply from Canada, however, which does involve a tanker movement south.

Mr. RIVERS. 700 miles.

Mr. SHORT. Sure, it is a long way from Seattle to Los Angeles.

Mr. MINCKLER. That is right.

Mr. SHORT. Almost as far as it is from here to west Texas.

Mr. RIVERS. What is it, seven? Seven hundred miles?

Mr. MINCKLER. No; it is farther than that. It is about eleven or twelve hundred miles. But this is the situation——

Mr. SHORT. You wouldn't deny the statement that the nearest, safest, and cheapest source of supply of crude oil in case of an all-out emergency is Texas, the west Texas fields, the nearest?

Mr. MINCKLER. Yes; I do deny that.

Mr. SHORT. You would deny that?

Mr. MINCKLER. Yes.

Mr. SHORT. You would question that?

Mr. MINCKLER. Yes.

Mr. SHORT. West Texas field is not the nearest, the quickest, safest, and most adequate supply in case of emergency?

Mr. MINCKLER. For the overall supply logistics of the west coast, that is correct. Here is the situation——

Mr. SHORT. I am not talking about the west coast clear up to Frisco, Portland, and Seattle. I mean to the San Diego-Los Angeles area.

Mr. MINCKLER. Those people need oil supplies too.

Mr. SHORT. You say they are getting it from Canada. Of course they are not.

Mr. MINCKLER. They are not. I didn't make any such statement.

Mr. SHORT. Well, you are certainly figuring on getting 240,000 barrels a day——

Mr. MINCKLER. My statement is that they are principally supplied from California refineries, and that is the way they are getting most of their supply. The total demand in that area is about 300,000 barrels a day. There is only planned and building about 100,000 barrels a day of refining capacity in the area. More refineries need

to be built in the Northwest; 200,000 barrels a day of products is moved by tanker from California to the Pacific Northwest. About 100,000 barrels of that is hauled in dirty ships, which can haul crude oil and fuel oil.

The ideal wartime operation of this thing, so long as we have to supply the Pacific Northwest from tanker from California, where it is the only place we have refining capacity, is to haul Canadian crude on a back-haul from Canada into San Francisco refinery areas. That does not increase the military exposure. Its cost is very low. The only time you are out is loading and unloading, or running empty.

So the statement is correct that the Canadian supply of oil, looking at the total overall logistics on the west coast, is Canada, Canadian oil. The facilities are in. The oil is there. And we have to move it.

Now, as refineries, or more refining capacity is built in the Pacific Northwest—and I think it will be built there—then that tanker exposure is eliminated to the extent that you have the refining capacity there.

Mr. SHORT. That is very true.

The reason the refineries will be built is because they are going to have an adequate supply of crude. They are depending upon that. Refineries usually follow pipelines, as industry follows hydroelectric dams.

Mr. MINCKLER. Well, there aren't many refineries in west Texas where we got all of the surplus crude oil. If refineries were built just to run crude oil, why, there would be plenty of them in west Texas, and there aren't.

Mr. SHORT. Sure. You have to have population and consumption.

Mr. MINCKLER. You have to have a market.

Mr. SHORT. And the market.

Mr. RIVERS. And transportation.

Mr. SHORT. Let me ask your views on this, Mr. Minckler:

The normal increase of petroleum demand in the United States is computed, I think, around 5 percent annually. About that, isn't it?

Mr. MINCKLER. Yes; in that range.

Mr. SHORT. Canada, of course, has been averaging about 10 percent increase, due to sort of a boom they have up there, and the increase in her population. But if you calculate Canada's increased demand the same as the United States, as 5 percent annually, in 1960 her demand will be for 1,371,000 barrels daily. And then if Canada reaches that production of 1,371,000 barrels by 1960, according to this letter of the Canadian Government, she will be producing around 800,000 barrels daily. So, the total defiiciency would be, oh, four or five hundred thousand barrels daily. She perhaps would still be importing over the next 4- or 5-year period.

Mr. MINCKLER. I think the natural thing is that eastern Canada will import oil and western Canada will export oil. That is the cheapest, sensible thing to do.

Mr. SHORT. Just one other thing.

I am rather pleased these last 2 days in Los Angeles to see the weather good and fair. When Mrs. Short and I got here a year ago, September, I couldn't see two blocks down the street: this smog you have. I didn't know whether I was in London or London and Paris at its worst combined. I don't know how long this fair weather you

have had will last. But this whole question of smog: I was going to ask you a little about the quality or gravity of the oil you are now getting from crude oil here in California. Is it black or green?

Mr. MINCKLER. Well, the characteristic of California oil is that it is heavier than it is in Texas, of course.

Mr. SHORT. It makes a little more smoke, doesn't it?

Mr. MINCKLER. Well, we don't have any problem of smoke.

Mr. SHORT. I have breathed some of it down at Richfield, between here and Long Beach.

Mr. MINCKLER. Yes.

Mr. SHORT. When I spoke 2 or 3 years ago.

Mr. MINCKLER. Of course, you are dealing with a subject about which my boiling point is very low. [Laughter.] And that is smog. [Further laughter.]

But I can give you a contribution. The refinery contribution of smog, according to the experts—and bear in mind that the experts don't know what smog is, even. But their calculation is that the refineries are putting out about 18 percent of the pollutants that go to make up smog.

Mr. SHORT. We had a very similar and difficult situation in St. Louis, burning that soft coal over in Illinois. But we have succeeded in eradicating most of it. I was wondering what you were doing or how you are getting along out here.

Mr. MINCKLER. Well, we are very reluctant to build any more refining capacity in the smog belt, I will tell you that.

Mr. SHORT. Well, in the Government's policy of dispersal or dispersion, don't you think maybe it would be wise to have refineries farther away from the coast and more inland?

Mr. MINCKLER. Well, of course——

Mr. SHORT. The Russians have built much of their industry back of the Urals, as we know.

Mr. MINCKLER. Of course I am not a military man. But I have had the idea that except from the one standpoint of submarines, St. Louis is just as close to Moscow as Los Angeles is, probably a little closer.

Mr. SHORT. No place is safe.

Mr. MINCKLER. I don't think any place is safe, and I don't think it makes much difference about things like that.

Mr. SHORT. That is all.

Mr. HÉBERT. Mr. Rivers.

Mr. RIVERS. Would you have any opinion on the percentage of contribution your refineries would make to the pollution with Texas crude as they compare with California crude?

Mr. MINCKLER. Well, that, Mr. Rivers, would depend upon the type of west Texas crude we got.

Mr. RIVERS. I am talking about the one with the fifty-odd-percent gravity as against your thirty-odd-percent gravity.

Mr. MINCKLER. The effect would be upon the sulfur content. And you have both sweet crudes and sour crudes in west Texas.

Mr. RIVERS. What do you have here?

Mr. MINCKLER. If we got the material that we got here during the war, the smog boys would have shut us down. But there is plenty of available sweet crude in west Texas. I don't think that would make any difference to us.

Mr. RIVERS. Sweet crude from west Texas against native crude from California, which would put out the greater percentage of smoke?

Mr. MINCKLER. I don't think you could detect any particular difference.

Mr. RIVERS. You couldn't detect any.

Let me ask you this, Mr. Minckler: I notice by the paper yesterday afternoon—I read the paper rather fully, whether it is a foreign paper or native paper. When I say "foreign" I mean one I am not accustomed to reading. I can take my own paper with its few pages on Sunday as compared with yours, of the Sears Roebuck variety, and it takes me a little longer to get oriented. But I found out where you had decreased over the last fiscal year of 20,000 barrels a day in production of California.

I am coming to this question: Would the importation of crude have any effect on that figure?

Mr. MINCKLER. I don't believe so.

Mr. RIVERS. Is that a true statement? I think the AP put it out.

Mr. MINCKLER. Production is down.

Mr. RIVERS. Production is down?

Mr. MINCKLER. Compared to a year ago.

Mr. RIVERS. Yes, sir. In the neighborhood of 20,000 barrels, I think it said, a day.

Mr. MINCKLER. Yes.

Mr. RIVERS. A day.

Mr. MINCKLER. That is a small thing. My company lost 2 or 3 thousand barrels of oil a day of production down at Long Beach, by an earth slippage. We lost 20 wells. We are now getting back those now. Things like that happen all the time, and you get these little fluctuations. There are about 15,000 barrels of oil, crude oil, a day in California that is shut in.

Mr. RIVERS. So you wouldn't say importation affected that figure?

Mr. MINCKLER. No.

Mr. RIVERS. Would you say this flush importation nationally would have any effect on wildcatting?

Mr. MINCKLER. You are getting into a problem that is very complicated. It is a subject, as you know, of constant debate in the oil industry. I don't believe that I know enough about the situation east of the Rocky Mountains to make an intelligent comment on it.

Out here, I do know something of it. Last year our imports were 52,000 barrels a day, that is, total foreign imports, from Canada and from overseas.

Our foreign exports were 76,000 barrels a day.

This area is a net exporter of oil and oil products. We are not a net importer in this area. But that east coast thing is—I would prefer not to say.

Mr. RIVERS. Is there any concern in this part of the world on discoveries?

Mr. MINCKLER. Yes.

Mr. RIVERS. New discoveries?

Mr. MINCKLER. Yes. Our discovery rate has been disappointing for many years. We think that that is going to pick up now with the permission to explore offshore. We are making some very interesting and very important experiments in secondary recovery. One of the witnesses will tell you about those later on.

Our recovery methods are getting better. But as I say, I believe that the crude oil production level of California at the present time can be just about held even.

Mr. RIVERS. While there is concern on new discoveries, there is no concern on present or future exploration, is that a true statement, of present exploration?

Mr. MINCKLER. Present exploration rate in California is at a very high level.

Mr. RIVERS. Very high level?

Mr. MINCKLER. Yes.

Mr. RIVERS. But discoveries are not?

Mr. MINCKLER. They have been disappointing.

Mr. RIVERS. And you don't attach any importance to the figure of the decreased production to the importation?

Mr. MINCKLER. No.

Mr. RIVERS. Well now, in the new discoveries, that are causing you concern, shouldn't new sources of transportation also cause you some interest?

Mr. MINCKLER. Well, I believe we demonstrated that interest. We built some 400,000 barrels of transportation facilities into this area. And we will build more, as Mr. Petersen says, whenever it is necessary.

Mr. RIVERS. While you say you are not under present smog, or whatever that word is, conditions which caused it to affect your boiling point in varying degrees—I think you said it was low awhile ago—you wouldn't increase your refining capacity in this area? You would not question the construction of a products line if the military deemed it in the inteerst of national emergency or national survival?

Mr. MINCKLER. I would not.

Mr. RIVERS. You would not question that.

Thank you, sir.

Mr. HÉBERT. Thank you very much, sir.

Mr. SHORT. Would the gentleman yield there?

Mr. RIVERS. Yes.

Mr. SHORT. Right on that point.

Mr. HÉBERT. Mr. Short.

Mr. SHORT. I think you stated at the present time the supply and consumption, demand, are about in balance, and you think that will continue to be true for the foreseeable future?

Mr. MINCKLER. That is correct.

Mr. SHORT. But should we become involved in a global conflict, it would quickly become unbalanced or reach a state of imbalance; would it not?

Mr. RIVERS. He testified very clearly——

Mr. SHORT. No. Do you think you have an adequate supply here on the west coast of crude oil?

Mr. MINCKLER. Yes.

Mr. SHORT. And gasoline?

Mr. MINCKLER. Of crude oil; yes.

Mr. SHORT. Yes. You, then, don't agree with the testimony of Mr. Petersen who appeared before the Committee on Interstate and Foreign Commerce just 2 years ago this month, in July of 1953, when he testified that the severity of the shortage was such that—

My company found it necessary to import into California substantial quantities of crude at a loss. With the combination of high demand on the west coast,

augmented by very large military requirements and accumulated shortage of crude oil relative to the refining capacity available, it was natural and necessary that these increases be made.

Now, that is the argument he gave when he came up and wanted to receive an increase in the price of gasoline and oil. It was due to these acute shortages that forced him to import into California substantial quantities at a loss. Not only his company, Standard Oil Company of California suffered a loss, but the United States Government and the taxpayers suffered a loss. Because, don't forget, it cost the taxpayers $1 million a day in transportation costs alone in World War II because of the expensive haul by tank cars.

Now, Mr. Peterson also testified on page 163 of these hearings:

While there is adequate supply at present and while the price increases have provided a production incentive, current price levels also recognize that the west coast can no longer be regarded as independent from outside supply. In our opinion, the historical independence of the west coast has probably ended. According to present forecasts the west coast will be an importer in the future.

Mr. MINCKLER. I believe that agrees exactly with the testimony that I have given here, that we have built these things to bring new supplies into the area. The Trans Mountain Pipeline was not in existence 2 years ago, if that is when Mr. Petersen testified. Many of these products pipelines were not in existence. We have recognized that California crude-oil production and refining cannot take care of the market area which it formerly supplied. And we have diligently gone about correcting that situation. I believe that has been done.

Mr. SHORT. But you state in your testimony that if you get crude here, you couldn't refine it and if you got it here, it would be of no use to us in time of war. But only today Mr. Petersen announced plans for expansion of west Texas pipeline facilities to a 20-inch line with ultimate potential capacity of 220,000 barrels of crude oil daily delivered to El Paso, and he explained that in an emergency the expanded line could make crude oil available to be shipped to California over Southern Pacific Pipe Lines, Inc., petroleum products line now under construction. So he thinks it would have some military value.

Mr. MINCKLER. I don't agree with that.

Mr. SHORT. You don't agree with that statement?

Mr. MINCKLER. I think the Southern Pacific line should be used for the movement, in case of emergency, of products. You can move more products through a line than you can crude oil, through the same line.

Mr. SHORT. Then you wouldn't have to worry about your refinery, after you got it here.

Mr. MINCKLER. You would have something that you could use. These things could happen, of course. But I doubt—I wouldn't depend upon that too much.

Mr. RIVERS. May I ask him just this one question? I want to get your position clear, Mr. Minckler.

You say in time of emergency, with what you know now about California, you are self-sufficient in crude. You wouldn't have to import one single, solitary pint of crude oil?

Mr. MINCKLER. No, that is not true. You said California. I presume you mean the west coast.

Mr. RIVERS. I am talking about this area.

Mr. HÉBERT. He is talking about district 5.

Mr. MINCKLER. District 5.

Mr. RIVERS. I am talking about California.

Mr. MINCKLER. California? California is not self-sufficient in crude oil. And I have outlined here——

Mr. RIVERS. I understood you to say the bottleneck was refining capacity.

Mr. HÉBERT. Let him answer. Will you answer that?

Mr. RIVERS. Go ahead.

Mr. HÉBERT. I wanted Mr. Rivers to give you a chance to answer the question.

Mr. RIVERS. I don't want to interrupt you, sir. Go ahead, sir. I don't want to be impolite to you.

Mr. MINCKLER. In case of an emergency, we will have, if you refer to this chart——

Mr. RIVERS. Elk Hills and all that stuff.

Mr. MINCKLER. We would have 1 million barrels a day of California crude-oil production, we would have 240,000 barrels a day from Canada, we would have 138,000 barrels a day of Elk Hills—crude oil. That is more crude oil than our present refinery capacity can run by the amount of the 138,000 barrels a day of Elk Hills oil.

Mr. RIVERS. So in the area which would likely be served by a proposed pipeline from the west Texas area, you, in wartime with tankers cut off, would have no need for west Texas crude?

Mr. MINCKLER. That is correct.

Mr. RIVERS. That is your statement?

Mr. MINCKLER. Yes.

Mr. RIVERS. That the bottleneck in time of war is productive capacity and not transportation——

Mr. MINCKLER. Refining capacity.

Mr. RIVERS. I meant to say refining capacity, instead of productive capacity.

Mr. MINCKLER. That is correct.

Mr. RIVERS. That is your statement?

Mr. MINCKLER. Yes.

Mr. RIVERS. And that the only thing we would need in time of war would be a products line, tapping the same vicinity; is that your statement?

Mr. MINCKLER. Well, from any place where there is surplus supply.

Mr. RIVERS. I mean to serve this area.

Mr. MINCKLER. Yes.

Mr. RIVERS. And you do not agree with that part of the statement alleged to have been made this morning by the president of the Standard Oil Co. of California, that crude would be needed in time of peace or in time of war?

Mr. MINCKLER. He didn't say that——

Mr. HÉBERT. He didn't say that?

Mr. MINCKLER. He didn't say that. He is building a crude-oil line from west Texas to west Texas, into El Paso, from west Texas oilfields to El Paso, Tex.

Mr. RIVERS. Yes, sir.

Mr. MINCKLER. That is all he is doing now.

Mr. RIVERS. I am not talking about what he is doing. I am talking about what he is saying. And among other things, he is alleged to have said this, if I understood Mr. Short and Mr. Hébert correctly, that in time of emergency that may be converted into a crude transportation medium.

Mr. MINCKLER. That is right.

Mr. RIVERS. Do you agree with that or not?

Mr. MINCKLER. That is physically possible.

Mr. RIVERS. But not economically or needed in time of emergency?

Mr. MINCKLER. I can't see in case of an emergency where that would do any good, because I think the products line to which he referred would stay as a products line. I don't believe it would be a crude line.

Mr. RIVERS. And under no conditions would this area need the importation of crude from west Texas or anywhere else in time of war?

Mr. MINCKLER. Would need it from Canada.

Mr. RIVERS. But——

Mr. MINCKLER. But that is all.

Mr. RIVERS. Wait now. I am talking about this area. I am talking about this area, not district 5.

Mr. MINCKLER. Oh, district 5. You are talking about Los Angeles area?

Mr. RIVERS. Yes.

Mr. MINCKLER. Los Angeles area is completely self-sufficient in crude oil under any circumstances by pipeline movements.

Mr. RIVERS. Or any other kind of movement.

Mr. MINCKLER. Well, I say we could supply the area. All of the refineries of this area can be supplied from California oilfields by pipelines which are now in existence.

Mr. RIVERS. And by native crude?

Mr. MINCKLER. That is correct.

Mr. RIVERS. In this, the Los Angeles area?

Mr. MINCKLER. The Los Angeles area.

Mr. RIVERS. And under no war or any other kind of emergency would you need to import crude, in this, the Los Angeles area?

Mr. MINCKLER. That is correct.

Mr. HÉBERT. Thank you very much, sir.

Mr. SHORT. I don't want to unduly delay the gentleman, but he has come a long way and he does know his subject. If I might be permitted to ask him another question or two.

Mr. HÉBERT. Go ahead, Mr. Short.

Mr. SHORT. I will try to make it as brief as possible.

In the hearings we held back in 1948 on the petroleum picture, the overall picture, after returning from Saudi Arabia, I said to Secretary Forrestal:

> So we shouldn't rely too much, certainly not altogether, upon the Near East as a supply for our Military Establishment in case of another emergency.
>
> Secretary FORRESTAL. Certainly it cannot be regarded with the same sense of security that we regard oil in Louisiana, Texas, or California.

And in that same hearing Mr. Vinson, of Georgia, speaking, said:

> Mr. Chairman, since we are talking about California, this is sort of running through my mind. What would be your thought, Mr. Secretary—

addressed to former Secretary Ickes—

with reference to building a pipeline for oil from the fields of Texas out to California, to some of the big national-defense bases?

Mr. ICKES. We have considered that. More particularly, I have discussed that on several occasions with Mr. Ralph K. Davies, who I understand came up here and who is one of the most competent oilmen in the country and knows his California. I at first doubted whether it could be done. He told me that in the opinion of the engineers, who had somewhat explored it, was that it could be done.

Mr. VINSON. Could be done?

Mr. ICKES. Yes.

Mr. VINSON. My understanding is that they now have a gasline from the Texas fields out into California. The thought has been running through my mind for a considerable time that in view of the likelihood of the national defense requiring a great deal of petroleum on the west coast, we should not be dependent entirely upon the fields of California, that is, Elk Hills, but we should bring oil from the Texas fields by pipeline and make it available to the national defense in the Pacific area, particularly in California.

Mr. ICKES. California greatly needs new supplies of crude.

Mr. VINSON. That is right.

And then in a report by Mr. C. E. Davies, Assistant Deputy Administrator, Domestic Petroleum Operations, he had this to say when the Union Oil Company of California and the Standard Oil Company of California were requesting adjustment of ceiling prices for crude petroleum:

Our review of the application submitted to OPS by Union Oil Company of California and Standard Oil of California results in the following conclusions:

1. There is a shortage of both crude oil and products on the west coast. The seriousness of the shortage is indicated by the fact that the military has been forced to purchase approximately 37 percent, 50,000 barrels daily of its west coast requirements from United States, gulf coast, and Caribbean ports, at a substantial increase in cost by reason of the abnormal transportation expense incurred. This is both an abnormal and an uneconomic operation for the military and is not in the best interests of national security and the national-defense effort. The shortage would have been greater if several west coast refiners had not imported approximately 37,000 barrels daily of crude oil from foreign sources at excessive cost.

It is evident that even the extraordinary and uneconomic movement of crude was insufficient to permit military demands to be met.

And further he states:

There is at the present time unquestionably a shortage of indigenous crude oil and of light products, that is, motor gasoline and distilate products, on the west coast which adversely affects our military effort and the national-defense program. The shortage is caused primarily by the impact of the extraordinary military and national-defense demands. As a direct result of the shortage of indigenous crude and of products, the military has been forced to purchase in excess of 37 percent, 50,000 barrels daily, of its west coast requirement at gulf coast and Caribbean ports at high cost due to abnormal transportation expense.

Because it cost 3 or 4 times as much to bring by tanker from the gulf ports to southern California as it would by a pipeline, and it cost about 6 or 8 times as much to bring it by tank car as it would by pipeline.

I wanted to get that in the record.

Mr. HÉBERT. Yes.

Mr. SHORT. And any comment he cares to make.

Mr. HÉBERT. Any comment to make?

Mr. MINCKLER. That was made in the Korean war?

Mr. HÉBERT. No.

Mr. SHORT. 1953; 1953, after the Korean truce at Panmunjom.

Mr. MINCKLER. Yes.

Mr. HÉBERT. Do you care to make any comment, sir?

Mr. MINCKLER. I don't.

Mr. SHORT. Certainly, with these B–52's that fly in excess of 50,000-foot altitudes and at 600 miles-an-hour and a 6,000-mile radius—they are not going to use less juice but much more.

Mr. HÉBERT. Thank you very much, Mr. Minckler. We appreciate your cooperation in coming up this morning.

Mr. MINCKLER. Thank you.

Mr. HÉBERT. Mr. Fox.

Mr. FOX. Yes, sir.

Mr. HÉBERT. All right, Mr. Fox, we will let you read your statement without interruption from members of the committee and then the committee will recess until 2 o'clock this afternoon, after you finish your statement.

Mr. FOX. Fine.

Mr. HÉBERT. And then question you on it.

Mr. FOX. Very good, sir.

Mr. HÉBERT. So if members of the committee will cooperate to allow Mr. Fox to read his statement without interruption. There is no use in getting into an examination of a subject and then have to leave.

All right, Mr. Fox.

STATEMENT OF STARK FOX, EXECUTIVE VICE PRESIDENT, OIL PRODUCERS AGENCY OF CALIFORNIA

Mr. FOX. My name is Stark Fox. I am executive vice president of Oil Producers Agency of California, a statewide organization consisting solely of independent producers of oil in California. Perhaps I should add, to make it clear, that it is a trade association.

It is a pleasure and a privilege to have this opportunity to present our views as to the availability of oil on the west coast in time of emergency. Like you, and like all citizens of our country, we are keenly aware of the all-consuming importance of keeping our Nation strong; like you, and like all citizens of our country, we want to contribute to that strength in every way we can.

Because we are in the oil business, and because we operate on the west coast, we are perhaps more familiar with the part west coast oil played in World War II, and are also in a somewhat better position to evaluate the part it may be called upon to play in another national emergency, than those who, even though they may be in the oil industry, do not live with west-coast opportunities and problems every day.

In any event, we are happy to give you our thoughts on the subject of your investigation. We hope that they will be of benefit in your deliberations.

The question of west-coast oil supply in time of war, it seems to us, revolves not around the problem of redistribution of present known supplies, but rather of increasing total supply. This opinion will be developed in full in following sections of this statement, but to provide the background necessary for complete understanding, the present west-coast oil-supply situation will be compared with that during World War II, our last real emergency.

With the chairman's permission, I will not read the subheading nor refer to the reference notes as they occur.

Mr. HÉBERT. All right. Proceed as you like. It will all be made part of the statement.

Mr. Fox. Yes, sir.

During the World War II years 1942 through 1945, inclusive, total California production of liquid hydrocarbons increased from 722,000 barrels per day in 1942 to 952,000 barrels per day in 1945. This production includes crude oil plus all natural gas liquids, and each of the war years saw an increase over the preceding year. Because of war demands, both military and civilian, California fields were produced at capacity; in fact, some fields, with consent of the Petroleum Administration for War, were produced in excess of maximum efficient rates. There was no reserve nor additional capacity available. The yearly increases from 722,00 barrels per day during the period 1942–45, inclusive, brought California production of all liquid hydrocarbons to a 4-year average of 850,000 barrels per day.

Now, we independent producers have grown accustomed to dire predictions that the supply of oil in California, and hence on the west coast, is running out, and that heroic steps must be taken to assure that supply. These have been recurrent predictions; we believe that this committee may be interested in what has actually happened.

Daily production was capacity production in California during World War II; capacity of California fields, including 43,000 barrels per day of Elk Hills production, was 952,000 barrels per day in 1945, 10 years ago. Today, capacity of California fields, according to the National Petroleum Council, is 1,058,000 barrels per day, exclusive of Elk Hills Naval Reserve, which is discussed later herein.

Thus, in spite of the dire predictions, and in spite of total production of approximately 3 billion barrels of liquid hydrocarbons between the end of 1945 and the end of 1954, availability of hydrocarbons in California exclusive of Elk Hills actually increased by 149,000 barrels per day. The current figure, moreover, represents efficient productive rates, whereas the World War II rate involves some excessive rates because of emergency needs.

Again referring to predictions that California is running out of oil, much has been made of the fact that there have been no so-called major oilfields discovered here in recent years.

On the other hand, in the 9 years 1946–54, inclusive, 718 new oil and gas fields and pools have been discovered in California, including discoveries of extensions to old pools, according to the American Association of Petroleum Geologists. This is an average of 79.77 per year, and it may be significant that during the last 4 years, 1951–54, inclusive, the average is even higher at 88 per year. Such a discovery rate lends support to the conviction that instead of running out of oil, California is maintaining its ability to produce at a high level if emergency conditions should require it.

This discovery rate, plus efficient operation of producing fields and the adoption of secondary recovery methods, has resulted in an increase in recoverable reserves of California liquid hydrocarbons.

As of the end of 1954, these recoverable reserves were 4,219 million barrels, an increase of 617 million barrels over their total of 3,602 million barrels at the end of 1946. During the 8-year period from the end of 1946 to the end of 1954, approximately 3 billion barrels of liquid hydrocarbons had been produced from California fields, so that the annual average of approximately 80 new fields and pool dis-

coveries, plus gains in production technology, replaced not only all production, but actually gave the State more reserves and a greater productive capacity than at the beginning of the period. The result is that the ratio of reserves to production increased from 10.7 to 1 in 1946 to 10.9 to 1 in 1954.

It would appear, then, that indigenous capacity to produce liquid hydrocarbons on the west coast has more than held its own over the years, which should confound those who have argued that it would inevitably decline.

There is another element in present west coast oil supply which was nonexistent during World War II. This element consists of product and crude oil pipelines into the Western States now operating or definitely scheduled to be built.

Three of these pipelines are for oil products. Their combined capacity is in excess of 60,000 barrels per day, and all of the products, in general from the Rocky Mountain States and from the Southwest, are adding or will soon add to west coast supply.

Because these pipelines carry products rather than crude, their capacity is much more significant than the mere figures would indicate. For example, west coast refineries manufactured approximately 40 percent of gasoline from the total of raw materials utilized in the manufacturing process during 1954. Thus, if the 60,000 barrel per day pipeline capacity were devoted exclusively to shipments of gasoline, the resultant addition to supply on the west coast would be the equivalent of 150,000 barrels per day of indigenous liquid hydrocarbon production. If, however, it were devoted exclusively to light fuel oils, the 60,000 barrel per day new pipeline capacity would provide a west coast supply equivalent to 450,000 barrels per day of indigenous raw material production, since west coast refiners recover less than 14 percent of light fuels from raw material processed.

These recoveries, gentlemen, are based on 1954 refinery operations.

Similarly, if this capacity were utilized for the shipment of fuel oil, it would be the equivalent of 178,000 barrels of raw materials per day, because residual fuel recoveries on the west coast are less than 34 percent.

In time of war, these product pipelines could be used at full capacity for whatever product or combination of products was in greatest need. This very flexibility in itself is of great emergency value, even though the variables involved make it impossible to relate the capacity directly to equivalent raw material supply. It is clear, howver, that a product pipeline of any significant capacity provides a disproportionately large supply in terms of raw materials.

The pipeline which brings Canadian crude to the west coast of Canada and to our own Pacific Northwest also provides an additional source of raw material supply.

This pipeline has an installed capacity of 150,000 barrels per day, and will have an ultimate capacity, when and if needed, of 300,000 barrels per day by the installation of additional pumping stations. It is at present operating at about 100,000 barrels per day.

Backing up this pipeline is a Canadian crude oil availability estimated at 975,000 barrels per day by the end of 1960. Of this amount, some 358,000 barrels per day will be used in Canada and the Northern States of the United States, leaving about 617,000 barrels per day for shipment to the Pacific coast. Obviously, with more than 600,000

barrels per day available, the ultimate of 300,000 barrels per day of pipeline capacity can be more than amply supplied.

With 150,000 barrels per day of installed crude oil pipeline capacity, and productive capacity of 1,058,000 barrels per day in California (exclusive of Elk Hills), total availability of raw liquid hydrocarbons on the west coast today is 1,208,000 barrels per day. This compares with 952,000 barrels per day at the end of World War II, including 43,000 barrels per day from Elk Hills, and an average of 850,000 barrels per day, including 23,000 barrels per day from Elk Hills during the 4-year World War II period. Raw material availability, exclusive of Elk Hills, on the west coast thus has increased 299,000 barrels per day, or 33 percent over the World War II peak, and 381,000 barrels per day, or 46 percent over the World War II average.

These increases in availability are in raw materials only, and do not include the previously discussed new sources of products to the equivalent of from 150,000 to 450,000 barrels per day of raw materials.

There is still another new supply of energy on the west coast which was nonexistent in World War II and which, while not a liquid hydrocarbon, is highly important. It is the natural gas now being brought into California, and soon to be brought into the Pacific Northwest from the Southwest and Canadian producing areas.

During 1954, this supply of natural gas was 1.27 billion cubic feet per day, the equivalent of 213,000 barrels per day of fuel oil. Present capacity of the pipelines is approximately 1.4 billion cubic feet per day, and announced plans of the utility companies concerned call for an additional 450 million cubic feet of daily capacity by January 1, 1959. With capacity thus increased to approximately 2 billion feet a day, the equivalent of "imported" natural gas in terms of fuel oil will be 333,000 barrels per day. In addition to gas imported into California from the San Juan and Permean Basins, some 250 million cubic feet a day are being brought into Arizona and Nevada, and another 230 million have been authorized into Oregon and Washington, the equivalent of 80,000 barrels per day of fuel oil.

As for California, this natural gas supply in fact displaced fuel oil consumption by public utility and industrial users to the extent of 178,000 barrels per day in 1954. Additional supplies of natural gas, as planned by the utility companies, will make additional quantities available for these classes of users. The effect is to make more liquid fuel available for other users, including military, and hence to augment the quantity of petroleum available during an emergency.

Compared with World War II, therefore, availability of raw hydrocarbons in the Western States, including the petroleum equivalent of natural gas will, within the next 5 years, have increased from the 1945 peak of 952,000 barrels per day to 1,471,000 barrels per day, an amount of 519,000 barrels per day and a percentage increase of 53 percent. This is an increase of 621,000 barrels per day, or 73 percent, from the World War II average of 850,000 barrels per day.

Oil demand on the west coast continues to increase, of course. Of total demand, however, there is one basic element, civilian domestic demand in the five Western States of California, Oregon, Washington, Arizona, and Nevada, plus Alaska and Hawaii and minor shipments to contiguous States. This demand averaged approximately 953,000 barrels per day in 1954, against a capacity of 1,058,000 barrels per day

of indigenous liquid hydrocarbon production (exclusive of Elk Hills). In addition, there were pipeline and other shipments of crude and products of a little more than 57,000 barrels per day from other domestic sources. These shipments did not include any imports from foreign sources. Thus, domestic capacity plus receipts of oil from domestic sources was 1,115,000 barrels per day, against a civilian domestic demand of 953,000 barrels per day. There was, therefore, a surplus of 162,000 barrels per day in west coast availability of oil as compared with the civilian west coast demand for oil.

Offshore demand for west coast oil was 83,000 barrels per day in 1954 and military demand was 119,000 barrels per day, making total demand 1,155,000 barrels per day.

In the event of an emergency, however, a large part of the offshore demand from California can be disregarded. It may be necessary to maintain certain shipments to the west coast of Central and South America, however, and to British Columbia. These shipments would probably be on the order of 50,000 barrels per day. Military demand, on the other hand, cannot be estimated herein.

Thus we have two factors; civilian domestic demand and necessary offshore shipments. Civilian demand, as of 1954, was 953,000 barrels per day, and could have been supplied by present California production and present shipments from other domestic sources into the west coast, with a 162,000-barrel-per-day surplus. Civilian domestic demand has, however, shown an average annual increase of about 3 percent since 1946, which, if continued, will mean a demand of approximately 1,127,000 barrels per day in 1960. Even so, present known productive capacity in California, plus shipments into the west coast from other domestic sources, leaves a deficit of only 12,000 barrels per day, or 62,000 barrels per day if necessary shipments of 50,000 barrels per day are added, which can easily be overcome by additional shipments either through the present installed and operating pipeline across Canada or additional shipments through present and planned product pipelines. The extent to which additional natural-gas supplies would reduce this deficit is difficult to estimate, but disregarding them, the Canadian crude line alone, which now has an installed capacity of 150,000 barrels per day, provides more than enough supply to overcome the estimated deficit.

The contemplation of a crude oil pipeline from any area into the west coast, as a defense measure, is idle unless there is sufficient refinery capacity to process the unusable crude into usable products. According to the United States Bureau of Mines, California refining capacity was 1,198,000 barrels per day on January 1, 1954. About 100,000 barrels per day additional has been scheduled by the end of 1955, which will bring the total to 1,298,000 barrels per day.

All of the increased refinery capacity, both now in operation and planned for the immediate future, is located geographically so as to rely principally upon crude oil from the presently operating Canadian pipeline. As noted earlier, that line now has a capacity of 150,000 barrels per day; it is designed for an ultimate capacity of 300,000 barrels per day. With indigenous raw material availability of 1,058,000 barrels per day in California and Canadian pipeline capacity of 300,000 barrels per day, raw material supply will be 1,358,000 barrels per day, 60,000 barrels per day more than refinery capacity. This surplus will exist without considering Elk Hills as a source of oil.

Thus it appears that present and planned refinery capacity on the west coast can be supplied by productive capacity of California fields plus crude oil pipeline capacity already built. It follows that the addition of another crude oil pipeline into the area, from whatever source, would create a surplus raw material supply of no use to anyone because there would be no facilities to process it into usable products.

The major refinery expansion planned for the west coast will be located in the Pacific Northwest rather than in southern California. Whether by accident or design, this policy in fact conforms with the general national-defense policy of dispersal of military facilities. It also, as a practical matter, makes incongruous any plan to bring additional raw material into the Los Angeles area.

Occasional reference has been made to the fact that there was a shortage in west coast oil supply during World War II. It may be helpful to review the experience during that time and compare it with present conditions.

First, California production averaged 850,000 barrels per day during the period, with a peak of 952,000 barrels per day in 1945. This petroleum availability compares with a present capacity of 1,058,000 barrels per day—106,000 barrels per day more—today.

Second, receipts of all oils—from crude oil to the lightest of products—ranged from 6,000 barrels per day in 1942 to a peak of 40,000 barrels per day in 1945, averaging 23,000 barrels per day. Total availability of oil during World War II was, therefore, 873,000 barrels per day on a 4-year average, and 992,000 barrels per day in the peak year of 1945. Peak year availability, including production and shipments into the area, thus was 66,000 barrels less than today's local crude and natural-gas liquids productive capacity alone.

Furthermore, in 1954, normal peacetime shipments into the west coast area, by all forms of transportation, but excluding imports of crude from foreign sources, were 57,000 barrels per day, or 17,000 barrels per day more than the World War II peak. This development, brought about by normal economic forces plus pressure of increased productive capacity principally in the Rocky Mountain region, has resulted in increased facilities for use if an emergency arises. These facilities consist of the new product pipelines referred to earlier herein. While there is no public information available by which to gage estimated military demands for oil on the west coast if there should be an emergency, it may be possible to measure the impact of such a demand by a review of the experience during World War II.

In 1945, the year of peak Federal demand on the west coast in World War II, Government purchases were 400,000 barrels per day. These purchases represented 42 percent of the California oil industry's productive capacity of 952,000 barrels per day during that year, and 40 percent of the available supply including receipts of crude and products from domestic sources outside the west coast.

By contrast, a military volume of 400,000 barrels per day in 1954 would have represented 38 percent of California productive capacity, exclusive of Elk Hills, and 36 percent of capacity plus receipts exclusive of foreign imports during the year.

If the present installed capacity of 150,000 barrels per day of the Canadian crude line is considered a firm source of supply to the west coast, as it is, a 400,000-barrel-per-day military requirement becomes

only 32 percent of oil availability on the west coast. This is 8 percentage points less than it was in the World War II peak year. With designed ultimate capacity of 300,000 barrels per day of the Canadian pipeline in operation, military demand would be only 28 percent of total availability, including California productive capacity and receipts from domestic sources but exclusive of all seaborne imports.

Conversely, military demand could rise to 565,000 barrels per day, an increase of 165,000 barrels per day or 41 percent, and still only equal the percentage of total available supply which it represented during World War II.

There is a potential source of oil of considerable magnitude on the west coast. It consists of the submerged lands off the coast of California, on which many seismographic surveys have been made and on which actual exploratory work can soon be undertaken.

The latter was impossible, of course, before the controversy between the coastal States and the Federal Government over ownership was settled by the last Congress. It has since been impossible because of restrictions in the California law. This law has been amended by the State legislature, and now permits orderly development of these oil deposits.

In a report of the National Petroleum Council, it is estimated that availability of oil from submerged lands off the California coast might reach approximately 100,000 barrels per day within 5 years after they had been opened for development. There is no question that exploratory work will now be undertaken by the industry. Thus, in addition to the available supply heretofore described herein, there is a potential supply increment of 100,000 barrels per day just off the California shore.

Development of offshore production in California does not represent the ultimate in west coast oil supply, however. There is much interest in oil possibilities in Oregon, Washington, and Nevada, as well as Arizona. Thus far, wells drilled in these States have proved unproductive except for Nevada, but geological formations of promise still exist and cannot be written off until they are tested by the drill. Obviously, no availability can be forecast at this time; the possibility is mentioned here as a potential "bonus," over and above the assured supply already described.

In the event of an emergency, it may be well to bear in mind that it will be national, and not confined to the west coast. A wartime demand for oil will not be localized; it will affect oil demand in the rest of the country as much as, or more than, on the west coast, particularly in the industrialized east in which most war material is produced.

At the same time, total supply of oil available to the Nation will be diminished by the extent of the disruption of imports from foreign sources. Currently, approximately 1,250,000 barrels per day of such imports are entering the country, all but approximately 100,000 barrels per day of which are laid down on the Atlantic seaboard. It is fair to assume, we think, that this supply would be seriously restricted until naval supremacy were established.

If imports were cut by half during wartime, the excess production capacity of about 2 million barrels per day as reported by the National Petroleum Council would be cut to 1,375,000 barrels per day.

All possible domestic oil would be needed—and it would be needed throughout the Nation. The domestic oil industry has developed along a definite geographical pattern; west coast oil supply has provided oil for the West; oil supply generally east of the Rockies has provided oil for middle western, southern, and eastern requirements.

Productive capacity of the Nation, exclusive of the west coast, is 7,880,000 barrels per day. Domestic demand for oil exclusive of the west coast in 1954 was 6,780,000 barrels per day. Thus, based on the 1954 average, productive capacity east of the Rockies was 1,100,000 barrels per day greater than domestic demand east of the Rockies. With imports of 625,000 barrels per day, total availability east of the Rockies would be 8,505,000 barrels per day during an emergency, or only 1,725,000 barrels per day more than 1954 demand. Thus, an increase of only 25 percent over 1954 demand in an emergency would absorb all of the excess capacity which existed east of the Rockies in 1954.

Obviously, in the event of war, all the oil available east of the Rockies would be needed east of the Rockies. There would be none for the west coast.

Throughout this discussion, whenever California capacity or availability of liquid hydrocarbons have been mentioned, it has been explicity stated that the Elk Hills Naval Reserve was excluded. The intention has consistently been to describe conditions of availability without regard to Elk Hills because it is our understanding that it is the policy of this committee, and of the Congress, to reserve production from Elk Hills for emergency use.

It is also our understanding that the present investigation is concerned with the availability of oil on the west coast in time of emergency. We feel, therefore, that the capacity of Elk Hills is germane to the subject, and that it is proper to consider it in the course of considering emergency west coast oil supply.

We have seen that west coast oil supply, exclusive of Elk Hills, consists of the following:

1. California liquid hydrocarbon availability of 1,058,000 barrels per day;
2. Product pipelines of 60,000 barrels per day capacity (equivalent to from 150,000 to 450,000 barrels per day of raw materials);
3. Canadian crude oil pipeline of from 150,000 to 300,000 barrels per day capacity;
4. Natural gas pipeline capacity of 2 billion cubic feet per day by January 1, 1959, equivalent of 333,000 barrels of fuel oil per day. (Plus the equivalent of an additional 80,000 barrels per day into Arizona, Nevada, Oregon, and Washington.)

We have also seen that civilian domestic demand is estimated at 1,127,000 barrels per day in 1960, which can be easily met by indigenous production of 1,058,000 barrels per day plus only 69,000 barrels per day, or roughly one-quarter the Canadian pipeline capacity, disregarding the 60,000 barrels per day of products pipeline capacity and the 333,000 barrels per day of fuel oil equivalent of natural gas pipeline capacity.

But in the event of an emergency, we have Elk Hills. Elk Hills has a capacity today, according to the National Petroleum Council, of 158,000 barrels per day. It is producing approximately 20,000 barrels per day, which means that it could produce an additional 138,-

000 barrels per day. There also is a "mothballed" natural gasoline plant ready to go into immediate operation and capable of producing 75,000 gallons of light products per day; such light products would supplement the existing supply in the event of war.

During World War II, Elk Hills' production increased from 12,000 barrels per day in 1942 to 43,000 barrels per day in 1945. Its wartime average for the 4 years was 23,000 barrels per day, just slightly more than its current production and some 135,000 barrels per day less than its present capacity.

If Elk Hills' total capacity were utilized during war, it seems only logical since Elk Hills is a naval reserve dedicated to that purpose, it would add 158,000 barrels per day of liquid hydrocarbons to the present indigenous capacity, as hereinbefore discussed, of California fields. The total then would be 1,366,000 barrels per day, made up of 1,058,000 barrels per day from present fields, 158,000 barrels per day from Elk Hills, and 150,000 barrels per day from the Canadian pipeline. This capacity compares with an estimated 1960 civilian domestic demand of 1,127,000 barrels per day, leaving an immediate surplus of 239,000 barrels per day for the military, again disregarding 60,000 barrels per day of product shipments into the west coast through existing pipelines and utilizing only half the ultimate capacity of the Canadian crude oil pipeline.

If the 60,000 barrels per day of product pipelines and the full capacity of the Canadian pipeline be included, then availability on the west coast becomes 1,576,000 barrels per day, made up of 1,058,000 barrels per day from present fields, 158,000 barrels per day from Elk Hills, 60,000 barrels per day of product shipments, and 300,000 barrels per day through the Canadian line. This would leave 449,000 barrels per day immediately available for military purposes. We understand that rationing plans for use in an emergency are in existence. If there were 10-percent rationing of civilian demand, an additional 113,000 barrels per day would be available; 226,000 barrels per day would be available with 20-percent rationing. In the latter event, 675,000 barrels per day would be available for military needs.

It appears from the data herein that with production from known California fields, with present facilities to supplement that production with both raw materials and products from continental sources, and with known production of emergency oil from Elk Hills, the west-coast oil industry is relatively better able to support the military than was the case in World War II.

It also appears that there will be no readily available oil from other domestic sources, since oil produced east of the Rockies will be needed east of the Rockies and that, therefore, emergency supplies as needed should be sought from areas upon which the industrialized east is not now dependent. This pattern is actually developing on the west coast, and if it is not interfered with, will continue to develop, making the west coast even sronger as time goes on.

The inescapable conclusion is that there is no reason for undue alarm about oil supply on the west coast in time of war, but even if there should be, an attempt to supplement it from west Texas sources is not sound. This subject has been studied by the Office of Defense Mobilization, by the Petroleum Administration for Defense, by the military, and by a disinterested panel appointed by the Office of Defense Mobilization. In effect, all of these studies

resulted in decisions that Government participation in such a project is unwarranted. With this we agree, for reasons which we have tried to make clear herein.

Mr. HÉBERT. Thank you very much, Mr. Fox.

The committee will stand in recess until 2 o'clock, at which time the members of the committee would like to have the privilege of examining you on your statement.

Mr. Fox. Very good, sir.

(Whereupon, at 12:25 p. m., the subcommittee recessed until 2 p. m.)

AFTERNOON SESSION

Mr. RIVERS. I will ask the committee to come to order.

Mr. Hébert will be slightly detained, so he has asked me to take the gavel until he appears.

Mr. Courtney suggested that we find out just who is present this afternoon on our first day's agenda, and who remains to testify this afternoon.

Mr. Courtney.

Mr. COURTNEY. As I understand it now, Mr. Seaman follows Mr. Fox, who has just testified, and who has not yet been examined.

There is a witness who desires to be heard, as the chairman explained this morning, from the State of Arizona, on behalf of the State of Arizona.

Mr. RIVERS. Is he here now?

Mr. COURTNEY. He is not here, Mr. Chairman. He will be here tomorrow morning.

Mr. RIVERS. Mr. Seaman is the next witness?

Mr. COURTNEY. Mr. Seaman, who is the next witness.

Now, anybody desiring to be heard—Mr. Kirk?

Mr. O'NEILL. I am scheduled after Mr. Fox.

Mr. RIVERS. Mr. O'Neill, you come before Mr. Seaman?

Mr. COURTNEY. Yes, that is right. Mr. O'Neill.

Mr. RIVERS. All right, sir; Mr. O'Neill, Mr. Seaman——

Mr. COURTNEY. That is our regular schedule.

Mr. RIVERS. Mr. McGanney?

Mr. COURTNEY. Mr. Spratt and then Mr. Miller.

Mr. O'Neill is to follow Mr. Fox. Mr. Seaman, whose statement is here, is to follow.

Mr. RIVERS. Who is No. 3?

Mr. COURTNEY. Mr. O'Neill, who is No. 3, is here. Mr. Seaman, Mr. McGanney, Mr. Spratt, and Mr. Miller. I understand Mr. Spratt will not be here to testify until tomorrow morning.

Now, Mr. Glasco, you indicated that you desired to be heard. And you would be heard in what behalf. I mean, representing yourself or an organization, or what?

Mr. GLASCO. An organization, the West Coast Pipeline Co.

Mr. RIVERS. You come on tomorrow morning.

Mr. COURTNEY. Mr. Chairman, anyone else that desires to be heard?

Mr. RIVERS. Is there onyone else here who cares to testify or represents any organization, either for himself or for that organization, who cares to testify?

(No response.)

Mr. RIVERS. Now, Mr. Fox.

Mr. Fox. Yes, sir.

Mr. Rivers. I want to thank you for a very fine statement prior to our adjourning for lunch.

Now, are there any members of the committee who care to interrogate Mr. Fox?

Mr. Miller. Yes.

Mr. Hess. I would like to ask him a question or two.

Mr. Rivers. All right. Mr. Miller.

Mr. Miller. Mr. Fox, as I take it from your statement, the deficiency on the west coast is in refining capacity rather than in raw product, petroleum product?

Mr. Fox. If there is a deficiency; yes, sir.

Mr. Miller. I mean in the event of an emergency, I should say, the deficiency would be in refining capacity rather than in ability to obtain the raw product?

Mr. Fox. Mr. Miller, I think the statement that I made indicates that there is sufficient raw material availability to occupy the complete refining capacity on the west coast without additional raw materials from any source.

Mr. Miller. So that if we brought——

Mr. Fox. I would say, then, that your statement is correct.

Mr. Miller. Then if we brought more raw materials in here in order to make them available we would have to have additional refining capacity?

Mr. Fox. To make use of them.

Mr. Miller. So just bringing the raw materials in is not going to solve the problem of an adequate supply of petroleum products in the event of an emergency?

Mr. Fox. Right.

Mr. Miller. I notice that you referred to a plant being in mothballs and the unit that you had used throughout your statement was barrels per day, but when you referred to the plant at Elk Hills you rated it in gallons per day.

Mr. Fox. Yes, sir.

Mr. Miller. Is that correct?

Mr. Fox. Yes, sir.

Mr. Miller. That 75,000 gallons a day, then, is just in excess of maybe a thousand, a little over 1,000 barrels per day?

Mr. Fox. Well, approximately 2,000—42 gallons to a barrel, Mr. Miller.

Mr. Miller. That is all.

Mr. Rivers. That is not much of a capacity?

Mr. Fox. It is quite a capacity when you consider that particular material is blending stocks for other products.

Mr. Rivers. What is it, a catalytic agent, or——

Mr. Fox. It is a natural gasoline plant which recovers butanes and propanes and so on from the natural gas that is produced in conjunction with the oil, and those materials are raw materials used to blend up and otherwise treat petroleum products.

Mr. Rivers. Build up the octane?

Mr. Fox. Used in blending up gasoline qualities, and so on.

Mr. Rivers. Mr. Hess.

Mr. HESS. Mr. Fox, from your figures that you gave us here in your prepared statement, the potential in the time of an emergency or in the event of war—the amount that could be increased?

Mr. FOX. Yes.

Mr. HESS. For example, the additional amount that could be produced at Elk Hills.

Mr. FOX. Yes.

Mr. HESS. And the additional amount that could be brought down from Canada.

Mr. FOX. Yes, sir.

Mr. HESS. What are we going to do with all that? That is going to be a surplus, won't it, if we don't construct additional plants to take care of that crude?

Mr. FOX. Well, Mr. Hess, you are not producing that from Elk Hills now, so it is not surplus.

Mr. HESS. You are not producing it?

Mr. FOX. No.

Mr. HESS. But in the event of an emergency you are going to have so much crude you won't know what to do with it?

Mr. FOX. Well, we are back now to Mr. Miller's point, that you need refining capacity.

Mr. HESS. That is exactly right.

Mr. FOX. If you are going to expand the raw materials capacity.

Mr. HESS. That is what I say.

Mr. FOX. Yes, sir.

Mr. HESS. Now, are there any plans in the making for additional refining capacity? Because if an emergency should come on us within the next few months, let us say, and you open up Elk Hills, and you bring additional crude down from Canada, you cannot use it?

Mr. FOX. Well, first, I would like to say that I of my own knowledge don't know what plans are in existence behind the closed doors of the refining and marketing companies for future expansion. I don't know the answer to that one. In the event of an emergency, I think we could probably count on a disruption of any oil being brought in to California or the west coast from overseas sources.

Mr. HESS. That is 50,000 barrels a day?

Mr. FOX. Roughly 50,000 barrels a day. Well, Elk Hills, for example, might take up part of that 50,000-barrel-a-day loss.

Mr. HESS. But the 150——

Mr. FOX. Immediately, but obviously if you are going to be completely self-sufficient for the military or for any other purposes on the west coast, you must increase refining capacity along with raw material availability, the one goes with the other. The one without the other doesn't make any sense.

Mr. HESS. Well, is there excess refining capacity in the area around—in areas or in Texas any place at all, that we could run a products line in here and in the event of emergency bring the products in?

Mr. FOX. I don't know the answer to that question, sir. I am not familiar with refinery capacity in the areas which you mentioned.

Mr. HESS. That is all.

Mr. RIVERS. Mr. Short.

Mr. SHORT. Mr. Chairman, one of the things that puzzles me in the hearings both at Washington and here is that some of the figures

given by some of the witnesses, and then figures that we read in testimony given by other people and read in your oil dailies and journals, don't jibe.

I must confess that Mr. Fox made a very fine statement, I thought, this morning, and rather reassures me——

Mr. Fox. Thank you, sir.

Mr. Short. I rest a little more easily to know that you are producing so much and so well here in California, and that you can meet not only your peacetime needs, but wartime requirements without bringing raw material or crude in from other sources.

Now, your picture was almost too rosy. While it encouraged me more than some of the testimony I have heard, it is so optimistic that it almost frightens me.

You made the point, certainly from your testimony, that there is plenty of oil here in California production, with certain supplies delivered through these pipelines that you enumerated. Now, the question pops into my mind: Is it possible that California could be overproducing its wells with the result that much oil, perhaps, is being lost forever to the detriment not only of the people here on the west coast but all over the United States?

Perhaps you are not following sound—of course, you don't have conservation here in California, as you do in some States. But I am wondering whether or not you are following good, sound engineering practices?

For instance, in this hearing in 1953, when Mr. Petersen, the president of Standard Oil of California, appeared before the Interstate and Foreign Commerce Committee, he stated on page 166:

> I think the producing people of the oil industry feel, Mr. Chairman, that an oil reservoir should properly be produced or could properly be produced at something like 7 percent extraction a year. California is producing its fields at about 9½ percent, or about 25 percent more than what good petroleum engineering would indicate would be proper practice to get the most oil out of that reservoir.

Now, I wonder whether you would agree with that statement? The soundest engineering among oilmen is that you can extract 7 percent a year and get the maximum oil out of the earth. But if you extract in excess of that, say 9½ percent, that you have been doing, which is 25 percent in excess of that amount, then you are going to waste a lot of your oil.

Mr. Fox. I take it, Mr. Short, that that was an expression of Mr. Petersen's opinion, and I would neither quarrel with nor support that opinion.

Mr. Short. That is a good, frank, forthright answer.

Mr. Petersen stated on the following page, 167, of the same hearing:

> Since the war it is estimated that some eighty-odd-million barrels have been produced in excess of the recommendations of the Petroleum Engineering Committee.

I wonder if that is an accurate statement?

Mr. Fox. I would assume so.

Mr. Short. You have actually produced eighty-odd-million barrels more since the war than was recommended by your best engineering genius and judgment?

Mr. Fox. I will certainly accept that as being a true statement.

Mr. Short. Fine.

Mr. Fox. Considering the authority for it.

Mr. SHORT. Now, then, not only Mr. Petersen, but Mr. Charles S. Jones, the president of Richfield, I think he is, speaking to the San Joaquin Valley Oil Producers Association, on March of last year, stated this:

> California has produced approximately 10 billion barrels of oil. I sincerely believe that excess rates of production, improper spacing of wells, high gas-oil ratios, blowing of gas into the air, and other practices followed in producing that 10 billion barrels of oil, resulted in the waste of another 10 billion barrels, waste in the sense that it can't now be recovered by the practices and methods now being generally followed in the fields where such oil exists.

That is a rather startling statement.

Mr. Fox. I heard Mr. Jones make it.

Mr. SHORT. Did you?

Mr. Fox. I was present at the time.

Mr. SHORT. Do you agree with that? It is rather shocking to just an ordinary layman. I am no expert in this field.

Mr. Fox. I don't know that I can completely agree with it.

Mr. SHORT. Particularly disagree?

Mr. Fox. No. Again, I will say that Mr. Jones is a man of knowledge and ability and stature in this industry, and if that is his opinion, why, as far as I am concerned, it is perfectly all right.

Mr. SHORT. Now, if it is true that this overproduction here, this stepped-up and overproduction, under high pressure, is wasting our oil, then why in the world can't we bring in oil from other areas where they are not overproducing, but where, for instance, like the west Texas field, they have over 1 million barrels a day shut in? They would like to get rid of it, to develop their fields. Why can't we use it where it is not being overproduced, if we want to conserve oil for the Nation?

Mr. Fox. First, I believe you opened your statement with a remark "If oil is being overproduced in California, then why can't we do these other things?" I have not agreed that oil is being overproduced in California.

Mr. SHORT. Although Mr. Petersen and Mr. Jones seem to think it has been?

Mr. Fox. And I refer you to the record. I haven't agreed.

Mr. SHORT. Well, there can be an honest difference of opinion between intelligent and good men.

It wouldn't do if we always agreed.

Mr. Fox. No.

Mr. SHORT. I don't always agree with my wife, but that doesn't keep me from loving her.

Mr. MILLER. Would the gentleman yield for an observation?

Mr. SHORT. Yes.

Mr. MILLER. I would say that the oil producers, or a majority of them, I think would welcome some sort of a conservation law in California. And a sincere effort was made to put one on the books. The legislature adopted one in 1939.

Mr. Fox. I believe that is the year, Mr. Miller.

Mr. MILLER. So-called—well, that was the last one.

Mr. Fox. The Atkinson bill you are referring to?

Mr. MILLER. The Atkinson bill. I was in the legislature at the time. But under our State constitution we have a referendum. The

law was the law that was passed by the legislature—the bill passed by the legislature and signed by the governor was held up by a referendum, and by a very narrow margin was defeated. Now, I don't know that bringing more oil in here is going to correct that situation, because I don't know of any way, unless the Federal Government stepped in and took some sort of cognizance over and exercised some authority over California in the conservation of that oil that it could be done, because, as I sense it—and I may be wrong—from time to time, and even right now, as I sense it, a foundation is being laid to try and introduce and adopt oil-conservation legislation in the State.

You know better than I. Is that true, do you think?

Mr. Fox. Mr. Miller, you referred to your experience in the State legislature at the time of the Atkinson bill. I would say that the matter of statutory conservation in the State of California: That question is a controversial one within the oil industry.

Mr. Miller. That is right. Highly controversial within the industry.

Mr. Fox. There are those within the industry who have consistently been proponents of such legislation. There are those who have consistently been opponents of such legislation. And there are those who from time to time have been on one side and then the other.

Mr. Miller. I think that was true between the time that the so-called Sharkey bill, back in the twenties——

Mr. Fox. A couple of years earlier than the Atkinson bill.

Mr. Miller. And the Atkinson bill that came along in the forties?

Mr. Fox. Yes.

Mr. Miller. As a matter of fact, the same advertising technique was used by one side that had been established by one side to defeat that very group of proponents.

Mr. Fox. Yes, sir.

Mr. Rivers. Let me ask Mr. Fox one question: Is it because of your position in representing all segments of the independent industry that you would rather not get involved in that particular thing about injury to the oilfields, or you just don't have an opinion on it?

Mr. Fox. About injury to the oilfields?

Mr. Rivers. Because——

Mr. Fox. You mean because of the production rates here?

Mr. Rivers. Yes.

Mr. Fox. No.

Mr. Rivers. Do you have an opinion on it?

Mr. Fox. It is my opinion that under the present practices in the oilfields in the State of California, ultimate recovery is probably being damaged as little as it is being damaged, if any, in States where there is a conservation law.

Mr. Rivers. So you don't feel there is a damage?

Mr. Fox. I don't think there is any material damage; no, sir.

Mr. Rivers. I see.

Mr. Fox. That is my personal opinion.

Mr. Rivers. Well, that is all I want.

Mr. Short. Mr. Chairman.

Mr. Rivers. Now, Mr. Short.

Mr. Short. Of course, we have two schools of thought, and I am glad Mr. Fox touched on it in his statement, well prepared statement.

You have one school of thought who have been predicting for years that we were going to exhaust all our resources and eat up our supplies. I remember back in 1919, and again in 1929, and the late 1930's we were going to run out of oil in the next few years. Of course you have the other school of thought, and he is the wildcatter and the gambler, and the boy who is willing to take a chance. He doesn't believe you will ever run out of gas. As long as he has a little money to explore and dig and drill, he will find the stuff.

Mr. Fox. May I interject, Mr. Short, that the latter is the man that has so far been proven right.

Mr. SHORT. That is right, I think experience has shown that.

Mr. RIVERS. He has found 75 percent of all the oil in this country.

Mr. Fox. Well, Mr. Short referred to the fact that in the thirties we were about to run out of oil tomorrow. Well, here we are in the fifties——

Mr. SHORT. That is right.

Mr. Fox. And Mr. Short has always said he wants a market for the 1 million barrels of expressed production in Texas.

Mr. SHORT. That is the whole point. In order to keep these men drilling and wildcatting and exploring and discovering new fields, they have to sell that oil.

Mr. Fox. That is right.

Mr. SHORT. To help keep the industry healthy. That is one of the arguments why we should be using that 1 million barrels that is shut in.

However, we don't want to overlook the other side of the question. No pancake was ever so flat it didn't have two sides. Your professor up at Stanford University—he is your neighbor, George.

Mr. Miller, here, from Alameda.

In San Francisco, on December 9, 1953, you read this little article:

Wasteful production-met orders are costing California vast quantities of oil, and although it is the second State in point of natural petroleum resources, it no longer fully is self-supporting in supplying the growing needs of its petroleum marketing area, David E. Faville—

Is that the way your pronounce it, Faville?

Mr. Fox. I don't know.

Mr. SHORT (continuing):

David E. Faville, professor of marketing, Stanford University, Graduate School of Business——

Mr. Fox. Yes.

Mr. SHORT (continuing):

Declared here—

and quotes him:

"It has been estimated we will have bought about $91 million worth of oil from elsewhere in 1953," he told members of the Rotary Club.

"Oil is the mainstay of the economy of the State," Faville said, adding that "if oil supplies are impaired or dry up through wasteful and extravagant methods of production, we all suffer."

Ultimate recovery from many of the State's partially depleted fields could be increased 50 percent by employing the most efficient production methods and by adhering to modern concepts of oil conservation, he maintained.

Of course, he is backing up——

Mr. Fox. He has good authority, Mr. Short.

Mr. SHORT (continuing). Petersen, yes, and Jones.

"Surveys indicate," he said, "that if enlightened production methods are used from the very beginning of a field's development, oil recovery commonly is increased by from 100 to 200 percent."

Conservation in oil production makes for market stability, the marketing specialist claimed.

"The effect of conservation," he said, "is to give the consuming public more oil at a lower average price because of lower operational costs and increased recoveries under orderly development.

"In the absence of stability, uneven production not only wastes our oil resources, but disrupts the market. Distressed prices are seriously damaging to producers and dealers alike. In the end, there are repercussions in scarcity of production and higher prices for consumers."

And there are just a lot of people who believe that delivering of west Texas and New Mexico excess crude into California through a pipeline would enable the State to inaugurate perhaps a more realistic conservation program.

Mr. FOX. I would take——

Mr. MILLER. But we haven't any. That is our trouble. And I don't know how you are going to get it. The Federal Government certainly can't come in here and tell California how it shall conserve its oil, any more——

Mr. SHORT. But if we had a pipeline and had the crude here it would naturally relieve the pressure on the overextraction.

Mr. MILLER. Well, of course, I don't know——

Mr. SHORT. From the field.

Mr. MILLER. But that there are other sections of the country that may have more of a deficiency in oil than California, and maybe we could unload some of that oil—why you could use some of it in Missouri, maybe, at present.

Mr. RIVERS. Mr. Courtney, do you have any questions?

Mr. COURTNEY. I have two questions.

Mr. Chairman, for clarification if you will refer to page 12, Mr. Fox, of your prepared statement, and to the figure 565,000 barrels per day.

Mr. FOX. Page 12?

Mr. COURTNEY. Yes, sir; it is the third paragraph from the top.

Mr. FOX. All right, sir.

Mr. COURTNEY. This question: Do I understand that on the basis of your information and calculations, you have presented, that there would be that sum of oil available at a day, and then I am going to ask you at what time, for military use?

Mr. FOX. Let me find the place here, sir, and see to what you refer.

Mr. COURTNEY. On page 12 you state:

Conversely——

Mr. FOX. Oh, all right.

Mr. COURTNEY (continuing):

military demand could rise to 565,000 barrels per day.

Mr. FOX. Yes.

Mr. COURTNEY. Now, is it your position before this committee that there is and would be that sum of oil available for military use?

Mr. FOX. On the basis of what has gone heretofore in this statement, yes.

Mr. COURTNEY. All right. Now, does that exclude rationing? That figure.

Mr. Fox. No. Rationing is not necessarily involved in that figure. That figure is arrived at in this way, Mr. Courtney: During World War II the consumption of products by the Federal—the purchase of products in California, or from the California oil industry, put it that way, by the Federal Government, amounted to 400,000 barrels a day in 1945, the peak war demand year.

Now, that 400,000 barrels a day represented in 1945 a percentage, and that is stated earlier here, and, frankly, I have forgotten what it is at the moment, but it represented a percentage of the total available supply of oil a that time. Applying the same percentage figure to the available supply of oil on the basis of 1954 availability, you would come up with this figure of 565,000 barrels a day.

Mr. COURTNEY. Then that would include rationing?

Mr. FOX. No, it has nothing to do with consumption by the civilian population. It is related to availability of crude.

Mr. COURTNEY. Without any disturbance of the civilian economy?

Mr. FOX. I think I have a statement in here later—in fact, I know I have——

Mr. COURTNEY. I am just curious about that figure.

Mr. FOX. With the 20-percent rationing I think we come up with a figure here of 500——

Mr. HÉBERT (presiding). He mentioned 10 percent and 20 percent.

Mr. FOX. Yes.

Mr. COURTNEY. You have acknowledged that.

Mr. FOX. Which is six-hundred-and-some-odd-thousand barrels a day, which would then be made available to the military with 20-percent rationing.

Mr. COURTNEY. In addition to the 565,000?

Mr. FOX. No.

Mr. COURTNEY. As a part of the 565,000?

Mr. FOX. 565,000 is what they would get, plus rationing.

Mr. COURTNEY. That is what I wanted.

Now, two other questions: Now, when in your opinion after, let us call it, "D" day, or the emergency, if it comes—how soon after that would, in your opinion, this 565,000 barrels be available from the known sources that you have described?

Mr. FOX. Well, I don't know how soon immediately is, but that is what I would say.

Mr. COURTNEY. You would say——

Mr. FOX. The length of time it would take them to get Elk Hills into 158,000 barrels a day, which is its capacity—and I would assume that could be done very soon, because capacity is measured on the ability to produce as of now, any given now.

So we have 158,000 barrels there. We have the Canadian pipeline, which is a part of this statement, or which is included as a firm source of west coast supply in all of this statement. The length of time it would take to bring that lineup into shipment——

Mr. COURTNEY. Do you care to express an opinion in terms of days or months?

Mr. FOX. Oh, a purely horseback opinion would be 30 days, and it might be 10. But I certainly would think it would be a relatively short time.

Mr. COURTNEY. Those are the only two questions, Mr. Chairman, on that 565,000.

Mr. HÉBERT. Any further questions by any members of the committee?

(No response.)

Mr. HÉBERT. Thank you very much, Mr. Fox.

Mr. D. B. O'Neill.

STATEMENT OF DONALD B. O'NEILL, EXECUTIVE VICE PRESIDENT, INDEPENDENT REFINERS ASSOCIATION OF CALIFORNIA

Mr. O'NEILL. My name is Donald B. O'Neill. I am executive vice president of Independent Refiners Association of California, a trade association of independent companies refining and marketing petroleum in the west coast States.

The opportunity to appear before your committee and to express our views on the adequacy of petroleum supplies on the west coast, which is being investigated by your committee, is appreciated. We believe that in holding on-the-spot hearings to develop the true facts concerning this subject, your committee is doing a real service for the Nation and the west coast petroleum industry.

The companies comprising the independent refining group are individually small in size. With one exception, none of them have plants exceeding 12,000 barrels per day of crude throughput capacity. However, although small in size, these companies have a deep and sincere interest in the national welfare as was demonstrated by their patriotic performance in the last emergency during World War II when they extended themselves, sometimes at an economic loss, to provide maximum military supplies for the war effort.

Some witnesses better qualified to comment on the overall picture of petroleum supply and demand in this area have expressed their views to your committee, our brief presentation will be confined entirely to the examination of the need for additional sources of crude oil supply from the viewpoint of the independent refiner in California. We hope that the opinions and information given herein will be of some value to your committee.

The public and trade newspapers in recent months have printed articles indicating that the basic reason for an investigation of the availability of crude supplies on the west coast, if an emergency should arise, is to determine whether the problem of assuring sufficient supply to support a war effort could be solved by the installation of a pipeline from west Texas to southern California.

This subject is not new to us. Perhaps a little historical background may be of interest to your committee. In the spring of the year 1944 promoters of such a pipeline project approached us and asked our support of their objectives, which we were happy to give, since at that time a number of independent refineries had unfilled capacity and were anxious to acquire additional crude oil. This association arranged a meeting at which the majority of the independent companies then operating were present, giving the pipeline people an opportunity to explain the details of their project. Although a great deal of interest was displayed, no definite commitments were made, and a few months thereafter the plan for the pipeline was abandoned, for the time being, when support and approval was denied by the Petroleum Administrator for War. At that time

between 35 and 40 independent refiners were operating in this area, as compared to less than 25 today.

Several times in the years between 1944 and the present plans for a pipeline to transport crude oil from Texas to California have been revived. At one time two separate groups were competing for allocation of the necessary steel by Government agencies charged with that responsibility, but after study by these agencies, and by the military, acknowledgment of the necessity of such a line for defense purposes was withheld. We now view the situation as it currently exists.

From the time of the first proposal that California refiners consider the use of west Texas crude oil, independent refiners have been concerned with a number of questions regarding the possible utilization of new crude supplies from this source. There has been skepticism that the west Texas fields had sufficient excess productive capacity to supply crude oil in the amounts required to operate the proposed line. In recent years the building of several lines from west Texas to the gulf coast and midcontinent refining areas has increased this opinion. Quality of the crude is another factor which causes some speculation. Several independent refiners had experience in this regard during 1945, when west Texas crude was delivered here in tank cars at the insistence and expense of the Navy, although a good many millions of barrels of California crude were being held in storage. The processing of this west Texas crude on an unmixed basis was difficult and something less than satisfactory because of the characteristics of its sulfur content and excessive quantities of salt. Serious corrosion difficulties were encountered.

Another factor which independent refiners have considered is the economic side of the picture. Transportation cost figures attributed to the management of the pipeline company range from a top of 60 cents per barrel, if the daily throughput is less than 75,000 barrels, reducing progressively to a low of 40 cents on a daily movement of 150,000 to 175,000 barrels. At current posted prices for west Texas "intermediate" crude of 32-degree gravity, which is the average gravity received by local refiners in 1945, plus a transportation charge of 60 cents per barrel, the laid-down cost here would be 15 to 20 cents per barrel higher than the cost of California crudes of the same gravity, thus in effect the refiner would be paying a bonus for an inferior crude. If west Texas sweet crudes were available, the differential would be even greater.

From our experience in World War II we are keenly aware of the severe demands which accompany a national emergency, and which require the utmost efforts of the petroleum and all other industries to furnish the supplies required to sustain our military forces. California oil people proved in the last emergency that the industry is able to carry more than its share of the burden, by furnishing much more than its proportionate percentage of the load, based on its refinery runs compared to the national total.

It is our belief that a similar all-out effort can be expected if the occasion should arise again. In order to meet such greater military demands the scope of which is not known, it is certain that greater supplies will be needed. Without going into detail or statistics, we think the supplementary supplies needed to completely fill our refining

capacity could be obtained from west coast sources including California tidelands, Elk Hills, and Canada.

According to figures published by the United States Bureau of Mines, as of January 1, 1954, the capacity of all independent refineries in California totaled 159,000 barrels per day, approximately 12 percent of the total refining capacity in district 5. It should be noted, however, the total for independents given above included 16,000 barrels per day shut down and inoperable, and 20,000 barrels per day designed to process heavy California crudes into asphaltic products.

There were other plants shut down as of January 1, 1954, and additional shutdowns have occurred since, so that at the present time 29,000 barrels per day of operable capacity is shut down, much of it permanently. Most of these are straight-run distillation or skimming plants, which have progressively closed for economic reasons, because of their less efficient manufacturing facilities.

Reverting, then, to the total independent capacity of 159,000 barrels per day, and deducting 16,000 barrels per day which is inoperable, plus 20,000 barrels per day devoted exclusively to asphalt operations, we arrive at a total of 123,000 barrels per day available for processing of light crudes. Of this amount 29,000 barrels per day of capacity is shut down but operable, although not likely to be put back in service, leaving 94,000 barrels per day now in operation. This figure includes 22,000 barrels per day capacity which is designed for skimming only. Approximately one-third of the capacity now in operation is located in the San Joaquin Valley, which would eliminate these plants as potential users of west Texas crude oil.

Those plants now operating are, of course, running on California crudes and are experiencing no difficulty in obtaining sufficient supplies to operate at desired throughput levels.

To summarize our views on the adequacy of west-coast petroleum supplies now, and in the event of a national emergency, it is the conviction of the independent refiners in California, as expressed to this association, that sufficient crude petroleum and petroleum products will be obtainable from west-coast sources to supply such military and essential civilian requirements as district 5 refining capacity will permit.

Further, they are of the opinion that supplementary supplies of crude oil from west Texas would not be dependable since any excess crude in that producing area would be required and probably would move to its logical outlets in the gulf coast and midcontinent refining areas.

Capacity would not be available in independent plans to absorb any significant quantity of west Texas crude even if existing doubts as to quality of the Texas crude should be cleared, and cost differentials adjusted.

Our survey showed that under present conditions none of the companies covered would be customers of the line. Also involved in their thinking is the question of loyalty to the California independent producers who have been the traditional source of supply for these refiners, and whose position might be damaged by imports from west Texas.

In conclusion, we believe that the west coast can provide adequate supplies of petroleum to properly discharge its obligations in an emergency; that a pipeline from west Texas, whether built by Government

or private capital, is not necessary to protect an all-out war effort; that refinery capacity in district 5 can be completely filled with west-coast crude oil, and, finally, that independent refiners here are unalterably opposed to the principle of using the taxpayers' money to subsidize a private commercial venture.

Mr. HÉBERT. Now, Mr. O'Neill, there is one question I would like to ask: You also referred to the subsidy. I think you were present in the room this morning when it was explained exactly what a certificate of necessity was, and a certificate of essentiality was.

Mr. O'NEILL. I heard you explain it to Mr. Minckler.

Mr. HÉBERT. He agreed at that time the use of the word "subsidy" was an unfortunate usage of a word, because in reality there is no subsidy provided for by Government at all in these lines.

Now, in connection with the statement, or your statement as to the military needs—and, you understand, again, we are just referring to military needs.

Mr. O'NEILL. Yes.

Mr. HÉBERT. Of course, you do not pretend to be a military expert?

Mr. O'NEILL. No.

Mr. HÉBERT. Of course not. And you do not know what the demand of the military would be in a projected war or a projected emergency. You have no way of knowing that?

Mr. O'NEILL. I so stated in the statement.

Mr. HÉBERT. Well, of course, we are admitting that. But admitting, then, that you don't know what the demand would be you are in no position, then, to say whether it would be sufficient—there would be a sufficient supply or not on the coast, would you?

Mr. O'NEILL. To the limits of our refining capacity in this district 5, yes.

Mr. HÉBERT. You would not be in a position to question the military?

Mr. O'NEILL. If it is beyond our capacity here.

Mr. HÉBERT. If it is beyond. You don't know that?

Mr. O'NEILL. No; I don't know that.

Mr. HÉBERT. Well, let us assume for the purpose of understanding your position that the military would inform this committee of its necessary requirements, which, of course, it has done already in executive session, and the military came to the conclusion that it was necessary to have an additional pipeline, would your organization have any objection to that, for the construction of such a pipeline, sir?

Mr. O'NEILL. In my statement, my organization doesn't have any objection to the construction of a pipeline. I only made one statement, that we oppose only the principle of Government subsidy.

Now, if, as you say, there is no subsidy involved, then we have no opposition to a line being built. We simply wouldn't be customers of the line under present conditions.

Mr. HÉBERT. Because now—if the military decided that it needed this extra standby line, and then decided that it should build such a line totally and wholly with Government funds, from the Defense Department, as contrasted to a certificate of essentiality whereby the money would be loaned by the Government and paid back by the private individual under current rates of interest, or guaranteed by the Government, which of the two would you prefer?

Mr. O'NEILL. Well, I can't see how any private capital is going to build a line unless they have customers to patronize the line. So far, I don't know of anyone who wants to buy west Texas crude if a line were put in. That is among the independents. I am only talking about independent companies.

Mr. HÉBERT. I understand that.

In other words, you say this, that economically—and, of course, we are not interested except for necessity—that it would not be an economic success to build a private pipeline with private capital?

Mr. O'NEILL. I think if it were the line would have been built some years ago.

Mr. HÉBERT. Of course that answers the question; I mean that fact answers the question. However, if you are then faced again with the choice of the individual saying "Well, we think we can build it if we have a Government loan or the guaranty of the money by the Government," which of the two then would you prefer, to gamble on that basis of construction or to tell the Defense Department to go out and build this standby line completely with defense funds, with no indication at all as to its operation, but merely as a standby line, using all tax money, then, for its construction? Which of the two would you prefer?

Mr. O'NEILL. I think that in either case you will be using tax money to—I won't say to subsidize, as it is a bad word, but to construct a line that regardless of whether the private individual or the Government charged the throughput for the use of the line, it wouldn't make any difference to me. The Government might just as well be in business, although I don't think that is a good policy, either, for Government to interfere with private business.

But if the Government is going to put up the money, then I don't see that private enterprise is really building the line. They are borrowing money from a Government source, which, to me is from the taxpayers.

Mr. HÉBERT. In other words, you then would prefer the Government to pay with tax money with no chance of recovery at all?

Mr. O'NEILL. The Government could charge transportation charge just as well as a private party can.

Mr. HÉBERT. Now, do I understand your position, then, that you advocate the Government construction of the line, and the Government operation of such a line?

Mr. O'NEILL. I don't advocate the construction of the line at all. If a line were put in, I have no opposition or objections to it, if the Government wants to put it in. If private enterprise wants to put it in at their own expense, I certainly have no objection to that.

Mr. HÉBERT. I know. But I come back—maybe I didn't make myself clear.

There are only three ways it can be constructed. One by private capital without assistance or the guaranty of the loan from the Government, which question has already been answered itself by the fact they have not constructed such a line under such conditions, except the line which we understand the Standard Oil of California has announced today.

Then that leaves us two proposals. And I again ask you which of the two proposals would you prefer?

Mr. O'NEILL. Do I have to prefer one of them? [Laughter.] I don't mean to be facetious, but I mean do you want me necessarily to take a position? I have taken a position that we don't think the line is necessary at all.

Mr. HÉBERT. I know that. You made yourself clear on that. But which of the two evils would you consider the lesser? I am trying to find out what thinking is here, that is if you had to make a choice. This committee has to make a decision. We have to recommend one of three things.

Mr. O'NEILL. I wouldn't have any choice in that situation.

Mr. HÉBERT. Tweedledum and tweedledee.

Mr. O'NEILL. That is right. It is like "When did you stop beating your wife?"

Mr. HÉBERT. Not that simple.

Mr. O'NEILL. I mean your question to me on it, when I have said I don't think a line is necessary at all—you asked me which way would I prefer to have it built. I don't care which way.

Mr. HÉBERT. Then I ask you again: If the military said it was necessary to build such a line, you would certainly bow to the decision of the military?

Mr. O'NEILL. Absolutely.

Mr. HÉBERT. Having bowed to the decision of the military that such a line must be built, then which of the two would you use? You do not care to decide?

Mr. O'NEILL. I think that decision should be up to the military rather than up to the independent refiners whom I am representing here today.

Mr. RIVERS. Let me ask him a question.

Mr. HÉBERT. Mr. Rivers.

Mr. RIVERS. You would have no complaint about the construction of a pipeline by the military on a standby basis, if they deemed it in the interest of the war effort?

Mr. O'NEILL. No.

Mr. RIVERS. Would you have any change of opinion if you knew that a pipeline were to be constructed to the west Texas field, and that it would deliver crude to this area in excess of 55-percent gravity, degrees gravity, or whatever it is—50°?

Mr. O'NEILL. Well, as I read it here, Mr. Rivers, the oil that we received——

Mr. RIVERS. That was 32.

Mr. O'NEILL. When I say "we," the group of independent refiners received oil, and it averaged 32 gravity, and it came from the Permean basin area.

Mr. RIVERS. And it wasn't any better than your oil here, was it?

Mr. O'NEILL. As far as the gravity is concerned, the gravity is higher than the average gravity here. But gravity isn't the only consideration in the desirability of crude oil.

Mr. RIVERS. Say it were 55 gravity sweet crude, do you think there would be any market among the independents?

Mr. O'NEILL. Well, there might be. I don't know what the posted prices would be for 55 gravity oil. I have never had any interest in that, anything that high.

Mr. RIVERS. You know there is some that high, don't you?

Mr. O'NEILL. Oh, yes. I think we probably have some 40 gravity or better out here, but that is the exception rather than the rule.

Mr. RIVERS. Yes, sir. So you have no opinion in any event on the Texas surplus?

Mr. O'NEILL. I was only speaking in here from an economic standpoint. If 32 gravity would be unusable from an economic standpoint, certainly 50 gravity would be that much higher in price, and that much higher to California crude.

Mr. RIVERS. What percentage of the independent refiners does your association represent, Mr. O'Neill?

Mr. O'NEILL. About 50 percent of the capacity of the independent refiners. But in preparing this statement I talked with companies representing probably a total of 80 percent of the independent refining capacity.

Mr. RIVERS. That is roughly a going output of 100,00 barrels a day, in round figures?

Mr. O'NEILL. Yes; around 93,000, I think.

Mr. RIVERS. Yes. Thank you.

Mr. HÉBERT. Mr. Short.

Mr. SHORT. Mr. O'Neill of course brought out two things you have to consider. One is the quality of oil and the other is the quantity of oil. No one in the oil industry doubts for one moment that the west Texas fields don't have a sufficient quantity, do they, when they have 1 million barrels shut in there?

Mr. O'NEILL. I don't know. You used the figure 1 million barrels before. I stated that there is some skepticism as to whether sufficient oil would be available to service that pipeline if it were built, with the other demands that have already been made on the fields.

Mr. SHORT. Well, the fact is that the 1 million barrels is shut in there today. They cannot sell that. They have it in excess. They are producing only 15 days out of the month. We have to find out what the facts really are. And I think it can be established that those are the facts. They are operating just 15 days out of the month, and they have 1 million barrels daily shut in there.

Do you know you have in oilfields, like anything else, whether it is a steel plant or anything—you can't shut down or bank your ovens all without suffering loss. The oil industry is not so different from other industries, in that when you start it you have to keep it going, in order to get the maximum production, with the least loss.

In your conclusions you say you are of the opinion that supplementary supplies of crude oil from west Texas would not be dependable since any excess crude in that producing area would be required, and probably would move to its logical outlets in the gulf coast and midcontinent refining areas.

Well, if there is a war, and we are attacked here on the west coast, certainly the gulf coast and the midcontinent refining areas would not be the logical outlet for that oil. You have all of the oil in the world in the Midwest, in Missouri where I live, Oklahoma, and Kansas and along the gulf coast, but if the fighting is out here, and we have to supply our fleet at San Diego, and we have to supply our Air Force here on the west coast, the logical outlet and the imperative one would be right here.

Now, we have to decide whether or not we have the quantity of oil, and then the grade and type of oil. Of course, they have sour oil in

Texas, as they have in California, but they have a lot of sweet oil in Texas. Certainly it was refined and used in World War II. You got rather large, enormous amounts brought out here. Of course, at an excessive cost due to the transportation charges.

But we have, it seems to me—maybe we can hear from some witnesses tomorrow who can bring us examples of the different types of oil that are produced here in California as compared to the different types produced in Texas, and see whether or not you could refine Texas oil.

I was under the impression that a lot of the Texas crude, sweet crude, has less sulfur content than your California oil, and that a lot of these old wells—and you do have some of the oldest out here on the west coast—have been pretty well pumped dry, some of like my marginal lead and zinc mines down around Joplin and that tri-state area. It isn't the quality and as quite as good today as it once was.

I think those are two things we have to keep in mind.

Now, one thing that disturbed me is that you say California crudes here could be produced at less expense, or the cost laid down here of Texas crude would be 15 to 20 cents a barrel higher than the cost of California crude. That is another matter we should look into and get the facts on it.

I am glad the chairman, Mr. Hébert, brought out the question of subsidy again. You know that a certificate of essentiality requested is, in fact, the same sort of a guaranty by the Government as would be a Federal Housing Administration guaranty on a home-loan mortgage. The Government actually advances no money, nor is it contemplated or believed that the Government shall ever be called upon to advance any money to make good on the guaranty, because according to all engineering reports the entire bond issue of 85 million, after the company itself would raise at least 31 million, would be entirely paid off within a period of 10 years, or less, due to the cheap transportation charges.

I have here some interesting figures that perhaps should go in the record at this point, since you come to the coast. The current posted Persian Gulf price for 36 gravity oil is $1.97 a barrel. The tanker freight charges from the Persian Gulf area to the Los Angeles area is $1.37 per barrel, making a total charge of $3,34 per barrel at Los Angeles.

I would like for you to check or correct these figures, if they are inaccurate.

The current posted price for 36 gravity oil, eastern Mediterranean area, is $2,39 per barrel, and the tanker freight charge is $1.37, or $3.76 per barrel in Los Angeles.

West Texas posted price for 36 gravity oil is $2.69 per barrel. Pipeline tariff when west coast pipeline is constructed would be approximately 50 cents a barrel, or a total cost of $3.19 per barrel.

That means the total cost in Los Angeles of a barrel of Persian Gulf oil would be $3.34, eastern Mediterranean would be $3,76, and of west Texas would be $3.19. It would cost you less, of course, to buy it from west Texas than it would the other two sources.

If we could depend upon these long supply lines in time of war we perhaps could rest easily. But, as the Committee on Armed Services,

charged with the national defense and security of our Nation, we dont' want to run any undue risk so far as having an adequate supply of petroleum here on the west coast is concerned. And the witnesses we heard this morning, the men that preceded you, have established pretty well at the present rate of production and consumption, which is pretty evenly in balance, we perhaps could go on for the next several years, with the pipelines from Canada and the natural gas that is being piped in, and we could meet all of our domestic needs, though they are increasing enormously due to the rapid increase in population.

We lost two Congressmen in Missouri after the last census. You gained seven out here. You got 10 from this county. We got only 11 from our whole State. But you have more people in Los Angeles County than we have in the whole State of Missouri. And with 60 million automobiles on our highways, and this new road program coming on, and with the staggering, almost incomprehensible supplys that are being consumed by a modern mechanized car machine, as one member of the committee I certainly don't want to take any chances at all of not having an adequate supply out here, or a line that could produce it in case you were bombed and knocked out.

It is not only to help you folks in California, but I would be in hopes that we could keep the enemy from even getting over the Rockies or coming across Texas, and for quite a little distance. No one is safe today wherever he is.

Those are the facts that this committee must keep in mind, not merely think of the problem from a purely economic or a physical point of view, but from the standpoint of defense. We perhaps would be willing to pay a little more in order to have insurance, than to go without it.

I have no more questions.

Mr. HÉBERT. Mr. Miller?

Mr. MILLER. No questions.

Mr. HÉBERT. Mr. Courtney, do you have any questions?

Mr. COURTNEY. No questions, Mr. Chairman.

Mr. HÉBERT. Thank you very much, Mr. O'Neill.

Mr. Seaman.

STATEMENT OF LEONARD R. SEAMAN, EXECUTIVE VICE PRESIDENT, SAN JOAQUIN VALLEY OIL PRODUCERS ASSOCIATION

Mr. SEAMAN. Mr. Chairman, there is one error in the program notes I would like to correct before proceeding with this testimony. I am listed as the president of Intex Oil Co., and while I would love to assume that title I can't claim it. [Laughter.]

I am the executive vice president of the company, and I am afraid this might come as a surprise to some of the folks back home.

Mr. RIVERS. We want to upgrade you.

Mr. COURTNEY. Is it the principal of the thing or the money? [Laughter.]

Mr. HÉBERT. With that correction noted, Mr. Seaman, will you proceed.

Mr. SEAMAN. The San Joaquin Valley Oil Producers Association enjoys a membership which is made up of a majority of the oil producers in the San Joaquin Valley of California. These producers account for approximately 41 precent of the total production of crude

oil in this State. Production in the San Joaquin Valley has been maintained consistently above 400,000 barrels per day through active exploration and development drilling by members of this association. Because this group of oil producers is responsible for such a substantial portion of the State's total oil production, our association is vitally interested in any program which contemplates any material alteration in our operations.

The San Joaquin Valley Oil Producers Association does not maintain a large staff and, accordingly, the presentation of detailed statistical information before this committee will not be attempted in these remarks. Such data will be or has been presented to this committee in detailed reports and the remarks which I am about to address to you are based on that assumption. However, our association and its members are aware of our State's production and the means and methods employed to augment such production. We know that new discoveries regularly are supplementing our existing reserves, and that improved production and recovery practices are stretching existing reserves far beyond the potentials assigned to them several years ago. We are aware of the tremendous impact that accelerated offshore exploration will have on our State's production and reserves.

I work for a small, independent producer which has production in Texas and California. Naturally, we would like to sell more oil from our west Texas wells. Fifteen to seventeen producing days with low monthly allowables result in long-term investment in developing drilling. We have suffered from the effects of distress oil in this State many times in the past, and I do not doubt that we will have distress oil many times in the future for it is the very nature of our business that discoveries are not regulated by market demands. But up to now, at least, we in California have solved our own marketing and producing problems. We have had many occasions in which production has been shut in in this State because of lack of a market for certain types of crude oil, particularly low-gravity oil. This problem has been met not by asking for Government subsidy but by developing new refining techniques which now make it possible to use low-gravity oils on a competitive basis with high gravities. Currently, we are having a hard time fending off the threats from importing oil and gas on a strictly competitive basis, and I think I am safe from contradiction if I say that we will be hard pressed to compete with west Texas crude, too, if they have the Government on their side paying part of the bill.

New oil and gas reserves in this State, as elsewhere, are found by drilling wildcat wells, and it follows that the more wells we drill the more oil we are going to find. It also follows that the number of wildcat wells that are drilled are in direct relationship to the incentive and ability of those in the industry to pay for these high-cost, high-risk ventures. This ability to pay is naturally directly linked to the profits from our operations, and if our profits are reduced, so is our wildcat program reduced. I sincerely believe that if we curtail our exploration program, which we most certainly will have to do if we are going to be confronted with a subsidized oil pipeline from Texas——

Mr. Chairman, I want to give you my own interpretation of what I mean by "subsidized" when I have finished with these prepared remarks. [Continuing:]

We will lose more new reserves and production than possibly could be brought into this State from west Texas through this proposed line. We who live in Kern County where Edwards Air Force Base is located are proud of that installation, and yesterday at our local Rotary Club we heard the commanding officer tell us of the many outstanding things that are being accomplished there. However, every time we visit that desert area we are reminded of the once thriving mining industry that dominated that part of our country, Johannesburg, Randsburg, Majave, and other picturesque places. An industry that now has vanished and been abandoned primarily because of imported competitive minerals. There is very little activity in that area now because of the lack of incentive and I understand that our Armed Forces are stockpiling some of these strategic materials from sources outside of the United States. I cannot help but wonder if that program might have been avoided if we had maintained an incentive for private enterprise to continue its search for such minerals in this area. I fear the same situation will result in the oil industry if our incentive to wildcat is taken from us. The announced purposes of this investigation have to do with the sources and amount of oil and other petroleum products available for the west coast for military and other requirements. I sincerely believe these issues are normally and naturally integrated with the economics of the oil business on the west coast. Our national defense is dependent on local oil, and we must always be diligent in our search for it. Surely, our Federal Government is not going to give unfair advantage to producers in one State over those in another State during peacetime, and, in any event, our ability here to meet emergencies are dependent on a continued aggressive exploration program.

In summary, we would like to emphasize that: (1) There appear to be ample sources of crude oil to meet military and other requirements on the Pacific coast without the supplementation of crude oil from west Texas; (2) we believe that the importation of west Texas crude oil to California via any subsidized pipeline would actually jeopardize future military supplies because of a severe adverse effect on the exploration program in this State; (3) we believe that the only sound source of oil for national emergencies is local oil and that every encouragement should be given to local producers to prove and develop oil reserves in strategic areas.

Mr. Chairman, use the word "subsidization" in this fashion: Mr. Short referred to the Federal Housing Act, and it has been my experience through conversations with some of our local people working in the banks, that the Government now owns quite a few of those houses. And I think that anything that has a guaranteed loan behind it by the United States Government—that that Government has a fine chance winding up owning whatever it guarantees the loan on.

And I would be interested to know if that should happen what the Government's attitude would be then with respect to the line? Would the Government then own the line and operate it to the benefit of the producers, or would it actually go into the pipeline business, or would it set up some subsidiary corporation to do it, or in what manner would it be handled?

So that, for me, the word "subsidization" doesn't mean a direct guaranteed payment for a product. I think that some of our cotton

and some other things are stored around the country on commodity credit loans. I don't think the farmer thinks of it in that fashion. He thinks of it as a guarantied price. So I wanted to make that distinction clear to you.

Mr. HÉBERT. Mr. Seaman, of course, we accepted your interpretation of it, and it is a matter of interpretation. However, as the preceding witness or the witness before Mr. O'Neill, when I questioned what his preference was—now, this committee is not interested in the economics of the pipeline. I think we have made that quite definite and quite clear in the discussions this morning. We are only interested in the military necessity, and the military need for the erection of such a pipeline.

Now, if the military does decide that it needs such a pipeline as a military necessity for the defense of the country, then this committee is confronted with making the decision. We can't escape like Mr. O'Neill escaped, saying he has no preference. We have to have a preference. Then our preference is to decide between a totally constructed pipeline at Government cost as against a pipeline guaranteed which can have a chance of survival.

Mr. RIVERS. Or no pipeline at all.

Mr. HÉBERT. Or no pipeline at all; yes.

Now, merely for the purposes of explanation and merely using figures for the purpose of that explanation, if we say, for instance, that this pipeline will cost $100 million, then we are confronted with—are we going to have the Government put the $100 million in the pipeline, or are we going to allow the Government to guarantee a loan or lend the money for private capital whereby private capital would put up $20 million and the Government only $80 million?

Now, we are confronted, then, with the economy as far as the Government is concerned, whereby the Government runs the chance of losing $80 million or puts in the total $100 million into the proposition.

I think it is as simple as a question can be. And, of course, we have to make that choice.

Mr. SEAMAN. I understand.

Mr. HÉBERT. And, of course, the FHA—while there may be some bad loans, I think by and large you wouldn't have the building program in this country through private ownership if you didn't have the guaranty of ownership of the FHA.

Now, a lot of us disagree as to the extent it has gone. And I share your views about Government subsidy, personally. So I think we understand that.

Mr. SEAMAN. Well, if you are asking me to make a choice, I hesitatingly would prefer to have private enterprise to put up part of the pipeline cost and have the Government guarantee the loan in preference to having the Government build it in the first place.

But it was my understanding the function of this committee was to help determine whether such a line was necessary.

Mr. HÉBERT. Only from a military viewpoint.

Mr. SEAMAN. Right.

Mr. HÉBERT. We are not interested in the fiscal or economic program.

Mr. SEAMAN. I understand that, although it is difficult for me to sift that through some of the members of the committee's comments.

It seems to me you have gone into the economics of it to some extent, because you have stressed the fact that you have all of this oil down in Texas that producers down there would like to get rid of. And I understand that because we have some of it.

And I can give you a concrete example: We have 20 wells in Fluvanna.

Mr. RIVERS. That is the Permean?

Mr. SEAMAN. That is in Borden and Scurry Counties.

Mr. RIVERS. Yes.

Mr. SEAMAN. Now, in those 20 wells we have a half interest. We are a joint operator. Out of those 20 wells we are getting exactly the same amount of net production as we are getting out of 1 well right up here the other side of the Tehachapi Mountains. Now, there is quite a difference in production. It takes 3½ years to pay out 1 of those wells down there, and it takes 3 months to pay for 1 of these up here. If we didn't have this well we couldn't drill those down there, because you can't finance all of that out of that kind of production. All right.

But that is no reason to build a pipeline to California. Sure, that is a good economic reason to want to get rid of the oil, but that is not a military reason to build it to California.

Now, when you say you are not interested in economics, I can't agree with you. You have to be interested in economics, for this reason: If you weren't interested in economics you could bring it all out here from west Texas, and you could shut it all down here, because this is strategic. But if you did that you wouldn't find another barrel in California. The only way you would ever find any oil anywhere is to have an incentive to go out and do it. Now, we——

Mr. SHORT. And that applies to Texas and California, or any other region?

Mr. SEAMAN. It doesn't make any difference where it is.

Mr. RIVERS. Let me interject right there.

Mr. SEAMAN. Surely; go ahead.

Mr. RIVERS. Your same thinking would be just as strong on the importation of all this crude by tanker from the Far and Near East?

Mr. SEAMAN. I am very much concerned about that. I wonder what you gentlemen think you are going to do to supplement the one million and a quarter barrels that is coming into the east coast when they drop this bomb? Now, you are worried about 50,000 barrels coming in out here, and you want to supplement that or substitute it with west Texas crude. What are you going to do about that one million and a quarter barrels over there? What is the matter with running the line over there? Your need is much greater than it is here.

Mr. HÉBERT. I will say for your benefit the committee is very interested in maybe 1 or 2 more pipelines.

Mr. RIVERS. And we are going into that. We aren't only coming out here.

Mr. SEAMAN. Now, then, the point is this: You people are Members of Congress, and the Congress has said that we want to bring foreign oil in here. We want to do it—we want to conserve our oil at home, because they refused to pass the Neely amendment which would have prohibited or restricted or limited. There is no limitation now on the amount of oil.

Mr. RIVERS. Neely doesn't speak for me on any subject.

Mr. SEAMAN. Well, that is all right. [Laughter.]

I didn't say he did. I said Congress as a group has done this.

Mr. SHORT. A matter of policy; that is right.

Mr. RIVERS. It is a matter of policy. That is reciprocal trade you are talking about.

Mr. SEAMAN. All right. You can call it anything you want to, but to me it is right back here.

Mr. RIVERS. Neely doesn't care about your oil. Neely only cares about some of the coal production.

Mr. SEAMAN. Neely is not my boy, don't worry about that. He was speaking for Neely, and not me.

Mr. RIVERS. He was speaking for the coal operators.

Mr. SEAMAN. I said the Congress of the country has said go out and buy in all the oil you want to.

Mr. RIVERS. No, it hasn't.

Mr. SEAMAN. Where has it placed a limitation?

Mr. RIVERS. The Congress has given the President the power to set ratios of importation of all products. The textile people are howling louder than you are. That is the reciprocal trade.

Mr. SEAMAN. All right, call it anything you want. The oil is coming in. The oil is coming in.

Mr. RIVERS. The President can cut it all off.

Mr. SEAMAN. It is coming in. And now we are competing with it right here. The San Joaquin Valley Oil Producers are competing on oil with Sumatra and everywhere else.

Now, if you bring in some more from west Texas—and, by the way, as I understand it, there is no public domain in west Texas. I don't think the Government is getting any royalty out of west Texas at all, or any other part of Texas. And they are collecting quite a bit on California oil production, because when we went into the Union, why, we gave them a lot of land. But Texas didn't see fit to do it that way.

Mr. HÉBERT. I might say you are stepping on sore toes now. We have a little tideland problem in Louisiana, too. So let us get that straight. [Laughter.]

Mr. SHORT. I think Mr. Seaman's fundamental philosophy is pretty similar to the gentleman from Missouri. He talks something like a high tariff protectionist man.

Mr. RIVERS. It looks like we may be coming to what you are talking about; you can't tell.

Mr. HÉBERT. Let us understand ourselves, Mr. Seaman. The committee is not advocating moving any oil from any section of the country, or the sale of it. The committee is only interested in the supply that would be available in time of a war or an emergency. That is all we are interested in. We don't care whether that oil comes from California or Canada or from Texas, or any other part of the country. We are interested in knowing that oil will be here, on the day that we need it.

Mr. SHORT. A sure, safe, adequate supply.

Mr. HÉBERT. That is all we are interested in.

Now, we are trying to probe and find out what is the best solution to that preparatory defense measure. Whether the pipeline is the answer, we don't know. We are trying to find out.

Mr. SEAMAN. I understand. I understand that.

Mr. HÉBERT. We have been told that this pipeline could be constructed in 90 days—not this little pipeline that the Standard talked about, I mean that short distance. Our understanding is that the pipeline could be constructed from the west Texas field to California within a period of 80 to 90 days.

Mr. HESS. 1,050 miles.

Mr. HÉBERT. 1,050 miles.

That poses another question: Can we wait for that time, that 60 or 90 days, or do we need it now? And our whole objective is to find out from the military necessity the supply and the demand in a time of urgency and emergency.

Mr. SEAMAN. Is it your thought to use it only for military emergency?

Mr. HÉBERT. No. Availability.

Mr. SEAMAN. Well, I mean if you are to build it so it will be available when you need it?

Mr. HÉBERT. That is it, the oil will be available.

Mr. SEAMAN. In the meantime what are you going to do with it?

Mr. HÉBERT. We return to the problem, then, of are you going to have the Government build a standby line of $100 million, and don't even use it, just put the pipe down in the ground and let it stay there?

Mr. RIVERS. We don't know what we are going to do. We haven't come to that.

Mr. HÉBERT. Or are you going to let private industry develop it with a Government loan or Government guaranty? That is what we are trying to find the answers to.

We have no preconceived ideas. The committee doesn't know what its report is going to be. Like in all congressional committees you find advocates—and which none of us deny. Mr. Short is advocating this because he, from the information he has at hand, believes this is the answer. But he is merely the advocate and proposing it to the committee in making up the record, as you will notice. But the committee itself will make the decision. And maybe in the end Mr. Short or Mr. Rivers, or myself—I don't know. We don't know what the answer is. We are merely making up the record, and we are going to sit down and then decide.

Mr. SEAMAN. But it is certainly——

Mr. HÉBERT. Get your mind off the idea we are trying to move oil from any part of the country. We are not.

Mr. SEAMAN. Well, it is our desire to furnish you gentlemen the information that you want. And I think that part of that information is based upon our own experience. I can't speak for a lot of statistics, and whatnot. I have been in the oil business up there for 18 years, so I do know a little something about that. And I have been in it down in Texas, too, and I know a little bit about that.

While you gentlemen are not concerned with the economics of the oil business, we are. And we think that on the basis of experience that the best way to insure this supply of oil that you are talking about is to find it where you are going to need it, if we possibly can.

Mr. RIVERS. Encourage exploration?

Mr. SEAMAN. Encourage exploration in every possible direction.

Now, I venture to say this: We just found a new field here in California the other day. Up here the other side of the Tehachapi Mountains. We don't know how big it is yet because they haven't

drilled the outpost wells yet. But when you talk about 1 million barrels shut in in Texas, and you talk about conservation, and whatnot, you know I can't help wondering which is the chicken and which is the egg because I know down there that somehow or other the conservation seems to be tied to the demand for crude oil. And whether that is conservation, or not, is questionable in my mind.

Now, in Texas you usually—generally you are producing from relatively thin producing zones, and they are spread out over many, many miles, and you drill 1 well to 40 acres because it would be awfully silly to do anything else. But in California you are producing from multiple zones piled one on top of another. They are very thick zones in many instances. And your aerial extent is limited, generally speaking. So you can't say—well, you got an oilfield that covers 20 square miles in Texas, and you only got 1 that covers 1 square mile in California, but this 1 may be just as big as that 1 in total reserves.

Now, production methods are entirely different. You don't produce them the same way from that kind of producing zone as you do from the limestones and the thin zones in Texas. You can't pull those wells. You pull the water right in on top of you if you do.

Mr. RIVERS. What about that multiple recovery? Is there likelihood of ruin or to cause a lot of waste?

Mr. SEAMAN. Do you mean produced from more than one zone at the same time?

Mr. RIVERS. Yes, sir.

Mr. SEAMAN. No. That is purely a mechanical problem. If you can do it, why, that is fine. Because all you are doing——

Mr. RIVERS. Any great danger in that process?

Mr. SEAMAN. Well, absolutely not, as far as I am concerned. We are doing it out in west Texas, as a matter of fact, and in a couple of areas out there they are producing from the Mississippian, which is the bottom producing zone. And then they run an intermediate string inside to the upper zone and produce that.

Now, in California—you say or some people say we are not conserving oil. But in California, in lots of multiple zones, we got a lot of zones behind the pipe that we haven't even punctured yet. Because, normally, you will take your deeper zone first, and when that is exhausted you will come up and perforate opposite the next zone.

Mr. RIVERS. Yes.

Mr. SEAMAN. So when you talk about engineering reports, I think if you wanted to go back and collect them you would find that every engineering report that has been made on reserves has been wrong by at least 25 percent. And usually it is 50 percent. They usually get 50 percent more out of the field than the engineers say they are going to get out of it, for some reason or other; I don't know why. But that has been the history of it.

Now, we are going into secondary recovery here where we are going in and flushing the oil out with water and gas. And we are making some big strides in that direction.

So who can say today what the reserves and production potential of California is? No one can say that accurately. I can only say to you that we can go on our experience here, that we have done it up to now.

Mr. RIVERS. Have you any feeling on the injury to the field from that flush production during the war?

Mr. SEAMAN. Well, as far as I know, the engineers tell me—I am not an engineer, but they tell me that in some instances if you produce a well at a high rate over a prolonged period of time that you create a coning effect, which is that you suck oil around that circle, and then the spaces around in between the circles around the wells are left, so that you don't recover the oil out of those spaces between the areas that you have actually drained.

In other words, you may such it in too fast. Or if you have a gas cap or something like that, why, you may be taking the reservoir pressure off. I don't know. And I don't know how anybody can possibly sit down and say that if you produced this field in that fashion you would have gotten that much more oil out of it, because it just couldn't come out that way.

Our experience just shows it doesn't work that way. And when you say somebody is going to come and drop a bomb on us out here, and then if we had that oil in the pipeline we would be all right—shoot, man, if they drop a bomb out here what are we going to do with that oil? There isn't going to be anybody out here to use it. And what if they drop a bomb at the other end, where are you? The pipeline is no good.

I don't see how that will solve a thing, honestly I don't. I am no military man.

Mr. MILLER. Mr. Seaman, we are interested, of course, in the end product, the thing that can be used by the military. If we have a pipeline from west Texas up here, and we haven't the refining capacity out here to take care of that raw product, are we any better off if we don't have a pipeline?

Mr. SEAMAN. Well, we are not any better off unless they want to come out here and build a refinery, too, I guess.

Mr. RIVERS. If the military told us they wanted 500,000 more barrels of oil tomorrow, or some time within the next——

Mr. SEAMAN. Ninety days?

Mr. RIVERS. Ninety days.

Mr. SEAMAN. Yes.

Mr. RIVERS. Of products, could this area produce it, from your production and from your refinery capacities?

Mr. SEAMAN. Right out of here?

Mr. RIVERS. Yes, sir.

Mr. SEAMAN. Not according to my understanding, they couldn't.

Mr. RIVERS. So if we needed it we would have to build a products pipeline?

Mr. SEAMAN. From the testimony that has been given here, it is my understanding that with the sources of oil that we have that we are producing locally, and that we are bringing in from outside sources at the moment.

Mr. RIVERS. Yes.

Mr. SEAMAN. That we will run to capacity our refinery facilities.

Mr. SHORT. I am awfully glad you made that statement because I was going to ask that very question myself.

From the testimony given us in Washington before we landed here the night before last I was under the impression that you had some idle refining capacity here, perhaps as much as 250,000 to 300,000 barrels. But from the testimony given—I should have asked Mr. O'Neill, because that is down his alley.

I was going to ask you, Mr. O'Neill, whether or not you have any idle refining capacity or whether you are refining practically to the maximum degree of which you are now capable?

Mr. O'Neill. I stated that as far as the independent refiners are concerned, they have now about 29,000 barrels a day of unfilled capacity. And the same Bureau of Mines figures that I quoted from as of January 1, 1954: To the best of my remembrance, there was operating 1,198,000 barrels, with a total capacity of about 1,234,000. So there is only about 44,000 shut down. There wasn't any 200,000 barrels.

Mr. Short. All right.

Mr. Miller. It is about that 7 percent that someone spoke of this morning.

Mr. O'Neill. Yes. There is a little more capacity in operation now because of the Northwest plans that have been built.

Mr. Hébert. Mr. Courtney, any questions?

Mr. Courtney. No questions.

Mr. Hébert. Do you have any further questions?

Mr. Hess. No.

Mr. Hébert. Did you?

Mr. Short. No.

Mr. Hébert. Thank you.

Mr. Short. I would like to ask someone here—I am sure there are plenty of men in here who could answer—how much oil do we have in storage, or on supply at the present time here on the west coast? Around 34 million barrels?

Mr. Fox. About 25 million.

Mr. Short. Twenty-five million?

Mr. Fox. I believe so.

Mr. Short. Now, how many million of that in bottoms or in the pipeline——

Mr. Fox. Oh, excuse me. That is crude oil, is around 35. I am sorry. Total storage is approximately 120 million barrels, in district 5—products, crude, and all.

Mr. Short. All right.

Mr. Rivers. The whole business?

Mr. Fox. The whole business; yes, sir.

Mr. Short. That is district 5?

Mr. Fox. Yes, sir.

Mr. Short. Of course, that takes in Washington, Oregon, California, Nevada, Arizona, Hawaii, and Alaska?

Mr. Fox. The greater percentage of that, however, would be in the refining areas, the refining districts, or in California—the greatest percentage of it being in California.

Mr. Short. I understood you had approximately 34 million barrels.

Mr. Fox. That is crude oil.

Mr. Short. Yes; crude.

Mr. Hess. That is just crude.

Mr. Short. Of course, a lot of that you couldn't even take out. Perhaps 18,000 barrels. Which would leave you a supply of about 2 weeks—just about a 15 days' supply.

Mr. Kirk. That is normal.

Mr. Short. Of crude.

About 15 days' supply; wouldn't it be?

Mr. KIRK. That is normal.

Mr. COURTNEY. That is normal without additional storage.

Mr. SHORT. I mean 1 million barrels a day. That is approximately what they are using.

Mr. HESS. A normal supply.

Mr. RIVERS. Let me inquire: Would you say—taking that 125 million figure, that whole business, that is crude and everything, crude, products, and everything, what civilian supply would that be in terms of days or weeks?

Mr. FOX. Ninety to one hundred, I am advised now—well, 125 million divided by daily demand——

Mr. RIVERS. I mean for district 5.

Mr. FOX. Roughly a million or 1,100,000 barrels a day.

Mr. RIVERS. One million barrels a day consumption?

Mr. FOX. One million barrels a day, demand versus, 125 million barrels in storage. The demand is a little higher than that, so it would be something less than 90 to 100 days.

Mr. RIVERS. Three or four months?

Mr. FOX. Three or four months.

Mr. RIVERS. All right.

Mr. HEBERT. Thank you very much.

Mr. McGanney, you may proceed.

STATEMENT OF D. J. McGANNEY, PRESIDENT, SOUTHERN PACIFIC PIPE LINES, INC.

Mr. MCGANNEY. My name is D. J. McGanney. I am a vice president of the Southern Pacific Co., and president of the Southern Pacific Pipe Lines, Inc.

Southern Pacific Pipe Lines, Inc., is a Delaware corporation and a wholly owned subsidiary of the Southern Pacific Co.

Southern Pacific Pipe Lines, Inc., is currently engaged in the construction of a products pipeline system for serving the Phoenix-Tucson area in Arizona. The pipeline is scheduled to begin operation by December 31, 1955. The system is composed of two segments:

(1) An 8-inch line from El Paso to Tucson and Phoenix, and

(2) A combination 16- and 12-inch line from Watson in the Los Angeles Basin, to Phoenix via Colton, Niland, and Yuma, which will also serve the intermediate markets at the points mentioned above.

The map, copies of which have been distributed, shows the location of the facilities incorporated in this project and progress of construction to date.

The initial and ultimate capacities of the pipeline system can be briefly summarized as follows:

I. Products capacity of pipeline, El Paso to Phoenix:

(*a*) Initial capacity with one pump station, 13,400 barrels per day.

(*b*) Capacity with 2 pump stations, 20,000 barrels per day.

(*c*) Capacity with 3 pump stations, 24,000 barrels per day.

(*d*) Capacity with full loops, 48,000 barrels per day.

(*e*) Capacity of system with less than full loops would vary from 24,000 to 48,000 barrels per day, depending on the extent of looping.

II. Products capacity of pipeline, Colton to Phoenix:

(*a*) Initial capacity, 1 pump station, 39,200 barrels per day.

(*b*) Capacity with 2 pump stations, 56,100 barrels per day.

III. Products capacity of pipeline, Watson to Colton:

(*a*) Initial capacity, 1 pump station, 58,000 barrels per day.

(*b*) Capacity with 2 stations, 80,000 barrels per day.

IV. In the event of a national emergency that would require it, the flow of the line from Phoenix to Colton and Watson can be reversed. In this event, the products capacity of the pipeline from Phoenix to Colton and Watson is 48,000 barrels per day. This ultimate capacity is governed by the ultimate capacity of the El Paso to Phoenix segment.

V. The system has been designed to handle refined petroleum products and it is not feasible to simultoneously or alternately handle refined products and crude oil. However, in the event of a national emergency, the pipeline system could be readily converted to the transportation of crude oil only. In this event, the capacity of the pipeline from El Paso to Colton and Watson would be as follows:

(*a*) With a single 8-inch line from El Paso to Phoenix, the system has a capacity of 16,000 barrels per day of average crude oil.

(*b*) With looped lines between El Paso and Phoenix, the 8-inch pipeline system will have a capacity of 32,000 barrels per day of the same average crude oil.

(*c*) The crude oil capacity of the pipeline system from Phoenix to Colton and Watson is governed by the 32,000 barrels per day of the looped 8-inch line.

(*d*) If the El Paso to Phoenix segment of the line were looped with 12-inch pipe instead of 8-inch pipe, the capacity of the system would then be 600,000 barrels per day of average crude oil. This addition would require 3 more pumping stations between El Paso and Phoenix and 6 more stations between Phoenix and Watson. The map attached to my statement shows the location of the line and the location of pumping stations and the black line at the right-hand side of the map between Lordsburg east shows that we have approximately 100 miles of the pipeline actually constructed, and the work is underway all the way from El Paso to Colton. Contracts have been let and the "spreads" as they are termed in pipeline industry are working on the pipeline from El Paso to Colton. We have not yet let the contract from Watson to Colton.

Mr. HÉBERT. Now, tell me: How long have you known or did you know before today of the proposal of Standard of California to construct the pipeline which was announced today by Mr. Petersen?

Mr. MCGANNEY. I knew of that Thursday or Friday of last week because the Standard Oil Co. called me up and asked me of the capacity of our line, stating that they were going to issue some sort of a statement—Thursday or Friday.

Mr. HÉBERT. Thursday or——

Mr. MCGANNEY. Of last week.

Mr. HÉBERT. Of last week?

Mr. MCGANNEY. Yes, sir.

Mr. HÉBERT. Did you know they were going to construct this pipeline before that time?

Mr. MCGANNEY. No, sir—you mean the pipeline out east from El Paso?

Mr. HÉBERT. East——

Mr. SHORT. To El Paso.

Mr. HÉBERT. Or west of El Paso.
Mr. HESS. No.
Mr. RIVERS. El Paso west.
Mr. MCGANNEY. Oh, no; they have no proposal from El Paso west. They are proposing to build a line from the east into the El Paso refinery.
Mr. HÉBERT. That is correct.
Mr. RIVERS. Yes.
Mr. MCGANNEY. That was my first knowledge of that, sir. They have two lines there now. This is a substitution for what they already have and a greater capacity.
Mr. SHORT. Twenty-inch, isn't it?
Mr. MCGANNEY. That is right.
Mr. HÉBERT. This is a 20-inch line?
Mr. MCGANNEY. In place of two 8-inch lines.
Mr. HÉBERT. You never knew about it before?
Mr. MCGANNEY. No, sir.
Mr. HÉBERT. And today's statement, then, came as a surprise to you, when they tied your line in with their line?
Mr. MCGANNEY. No; because I knew they were going to do that when they asked me the question Thursday or Friday. I was surprised Thursday or Friday, but not today. [Laughter.]
Mr. RIVERS. Do you buy your crude from them?
Mr. MCGANNEY. We buy diesel from them, yes; and some crude oil. But they do supply us generally with our——
Mr. RIVERS. Crude?
Mr. MCGANNEY. Oil.
Mr. HÉBERT. That was on Thursday?
Mr. MCGANNEY. Yes, sir.
Mr. HÉBERT. That was the day this committee started its hearings, on Thursday?
Mr. MCGANNEY. I had no means of knowing that.
Mr. HÉBERT. They started on Thursday and held Thursday and Friday hearings in Washington. And the hearings were announced for a week before, that the hearings would start.
Mr. SHORT. Yes.
Mr. HÉBERT. Purely coincidental, of course.
Mr. MCGANNEY. It is so far as we are concerned.
Mr. HÉBERT. As far as we are concerned, too, it is very coincidental.
All right, Mr. Rivers.
Mr. RIVERS. Mr. McGanney, I wish you would get me straight on this: You are going to build an 8-inch pipeline from El Paso to Tucson?
Mr. MCGANNEY. And Phoenix.
Mr. RIVERS. And Phoenix?
Mr. MCGANNEY. Yes, sir.
Mr. RIVERS. Now, do you have any lines there now?
Mr. MCGANNEY. No, sir.
Mr. RIVERS. And then you are going to build a 16—a combination 16- and 12-inch line on into the Los Angeles Basin. Well, now, what is a combination 16- and 12-inch line?
Mr. MCGANNEY. Well, what I meant to say there—possibly I didn't use the right language. The line from Watson to Colton, as indicated on the map, is 16 inches.

Mr. RIVERS. I see.

Mr. MCGANNEY. And from Colton to Phoenix is 12 inches.

Mr. RIVERS. How are you going to keep a line of that diameter filled with an 8-inch line to the back?

Mr. MILLER. Come this way.

Mr. MCGANNEY. No, the flow of the oil in these two lines will be from El Paso west to Phoenix.

Mr. RIVERS. That is right.

Mr. MCGANNEY. And from Watson east to Phoenix. Phoenix is the key and consuming point.

Mr. MILLER. They will pump out this way.

Mr. RIVERS. I see.

Mr. MCGANNEY. There are two refineries at El Paso.

Mr. RIVERS. Yes.

Mr. MCGANNEY. There are seven refineries at Watson. And also intermediate territory at Colton, Imperial Valley, Niland, Yuma, and Phoenix—the flow is greater from the Los Angeles Basin refineries than from the two refineries at El Paso. So the line is designed to serve the market demand of the two.

Mr. RIVERS. And how many refineries are in Phoenix?

Mr. MCGANNEY. There are none.

Mr. MILLER. None? In other words, this is their line. They are going to pump two ways, meeting at Phoenix?

Mr. MCGANNEY. That is correct.

Mr. MILLER. You are pumping oil. The oil that they will use, and stuff, when the train gets to Phoenix, going here, will have originated in El Paso. Coming out here it will be pumped out here for that pump?

Mr. MCGANNEY. That is right.

Mr. RIVERS. You pump east from Watson?

Mr. MCGANNEY. East from Watson; yes, sir.

Mr. MILLER. And west from Phoenix?

Mr. MCGANNEY. West from El Paso.

Mr. RIVERS. I thought the objective of your line was to get all the stuff you could to the Los Angeles area.

Mr. MCGANNEY. No. We are attempting to enable the Los Angeles area to serve its market in Arizona, the refineries.

Mr. RIVERS. I see.

Mr. MCGANNEY. And we simply stated that if an emergency arose we could reverse it. It has a dual purpose, in other words.

Mr. RIVERS. All right. When you speak about looping, you mean just duplicate?

Mr. MCGANNEY. Yes. You loop it either part way or the whole way. If you loop it completely, then it is a duplication, yes. If you loop it only part way you get round the points of resistance.

Mr. RIVERS. I understand now.

Mr. MCGANNEY. To increase the capacity of the line.

Mr. HÉBERT. Mr. Miller.

Mr. MILLER. How long does it take you to lay this line?

Mr. MCGANNEY. We expect to finish it by September 31 this year. We started on the 1st of March with our surveys and rights-of-way, and so forth. The large part of it will be upon our railroad right-of-way.

Mr. MILLER. So you are not worried with obtaining right-of-way, then?

Mr. MCGANNEY. Yes, sir.

Mr. SHORT. It is really moving fast.

Mr. RIVERS. This is on your railroad property?

Mr. MCGANNEY. To a large extent; yes, sir.

Mr. MILLER. On the actual construction of the line, how much can you put in per day?

Mr. MCGANNEY. Well, may I ask our production manager that?

Mr. MILLER. That is, the average amount there will be some places where it will go slower and other places where it goes pretty fast?

Mr. MCGANNEY. About 2½ miles for each spread, and we have 7 spreads. So that will be about 15, 16 miles a day.

Mr. HÉBERT. Mr. Short, have you anything?

Mr. SHORT. No.

Mr. HÉBERT. Thank you very much, sir. We appreciate your coming.

Mr. MCGANNEY. Thank you, sir.

Mr. HÉBERT. Now, members of the committee, tomorrow we shall have the remainder of our witnesses. And I want to admonish the witnesses that the rules of the committee call for a prepared statement, as the witnesses have obliged today with their prepared statements.

We have three individuals I think coming from out of town. One individual I understand is here who has asked to testify. But to all I urge that they have a prepared copy of their statement, and we will discuss from that prepared copy.

I also wish to announce to the committee that we have sent a telegram to Mr. Petersen, the president of the Standard Oil of California, inviting him to appear before the committee tomorrow because I am sure the committee would like to ask him some questions in connection with the coincidental announcement today of the construction of the pipeline by the Standard of California.

So we will stand recessed until tomorrow at 10 o'clock.

(Whereupon, at 3:47 p. m., the committee adjourned.)

SOURCES OF SUPPLY OF OIL AND OTHER PETROLEUM PRODUCTS FOR THE WEST COAST OF THE UNITED STATES FOR MILITARY AND OTHER REQUIREMENTS

TUESDAY, JULY 12, 1955

HOUSE OF REPRESENTATIVES,
COMMITTEE ON ARMED SERVICES,
SUBCOMMITTEE FOR SPECIAL INVESTIGATIONS,
Los Angeles, Calif.

The subcommittee met at 10 a. m., with the Honorable F. Edward Hébert, chairman, presiding, and the following members present: Messrs. Hess, Rivers, Miller, and Short.

Mr. HÉBERT. The committee will come to order, please.

Mr. COURTNEY. Mr. Chairman, Mr. Spratt, whose statement has been prepared, from the Trans Mountain Oil Pipe Line Co., is the first witness.

Mr. HÉBERT. Yes; I was just going to call him.

Mr. Spratt, please.

I wanted to inform the committee that Mr. Petersen, of Standard Oil of California, will be here this afternoon at 2:30.

Sit down, Mr. Spratt.

Mr. SPRATT. Thank you.

Mr. HÉBERT. The committee will hear your statement and let you complete it without interruption, and then we will ask questions.

Mr. SPRATT. Thank you, sir.

Mr. HÉBERT. Proceed.

STATEMENT OF J. GRANT SPRATT, PRESIDENT, TRANS MOUNTAIN OIL PIPE LINE CO., VANCOUVER, BRITISH COLUMBIA

Mr. SPRATT. My name is J. Grant Spratt. I am president of Trans Mountain Oil Pipe Line Co., Vancouver, British Columbia.

I am appearing today at the request of the Western Oil & Gas Association to give to your committee the factual information respecting the Trans Mountain Pipe Line.

Trans Mountain Oil Pipe Line Co. is a crude-oil transportation concern which was incorporated by a special act of the Canadian Parliament in March 1951. A wholly owned United States subsidiary, Trans Mountain Oil Pipe Line Corp., operates in the State of Washington.

Construction was commenced early in 1952 and by October 1953, 723 miles of 24-inch line had been built across the Rocky Mountains and was delivering oil from Edmonton, Alberta, to Vancouver, British Columbia, on the Pacific coast.

During the years 1954 and 1955, facilities have been extended southwestward some 60 miles with construction of 20-inch and 16-inch lines to refineries at Ferndale and Anacortes in the State of Washington.

The capacity of the pipeline is presently some 120,000 barrels per day with 3 pumping stations in operation. A fourth station stands ready to increase throughput to 150,000 barrels per day immediately it is required. By adding another 3 stations, pumping capacity can be increased to 200,000 barrels, and with an additional 7 stations, or a total of 14, capacity of approximately 300,000 barrels per day can be developed.

It is estimated it would take approximately 18 months to bring the system up to full capacity if required, with the likelihood that it would be closer to a year under emergency conditions.

The Trans Mountain pipeline is an outgrowth of rapidly expanding oil reserves in western Canada combined with petroleum requirements of British Columbia and the Pacific Northwest States. The venture was also encouraged by both United States and Canadian Governments for defense purposes. Priorities for steel and other materials necessary for original construction were granted by authorities of both countries.

Present oil deliveries are averaging about 80,000 barrels per day, and it is expected that throughput will be in the order of 100,000 barrels per day by the beginning of the fourth quarter of this year.

Investment in the pipeline system to date is approximately $100 million.

According to estimates of the Alberta Conservation Board, western Canadian oil reserves stood at approximately 2½ billion barrels at the end of 1954. Producing potential of some 6,000 wells is estimated at approximately 500,000 barrels per day and current production is running about 300,000 barrels per day with an average of 330,000 barrels forecast for the year 1955.

Trans Mountain is now connected to 6 refineries with aggregate capacities of approximately 145,000 barrels per day. These refineries are located in British Columbia and the State of Washington. As a public carrier the company is prepared to expand its facilities as conditions warrant.

That is all, sir.

Mr. HÉBERT. Thank you very much.

Mr. Rivers.

Mr. RIVERS. I just want to ask you 2 or 3 questions.

This line, Mr. Spratt, is owned—who owns the stock in this company?

Mr. SPRATT. A number of the oil companies promoted the line. The stock is owned by about five large oil companies and several small companies and then a certain amount of it was sold to the public.

Mr. RIVERS. And it is all American money, who own the stock?

Mr. SPRATT. No.

Mr. COURTNEY. Excuse me. There are two companies, are there not?

Mr. SPRATT. Well, the company operating in Washington is a corporation. I say that is 100 percent owned by the Canadian company.

Mr. RIVERS. So it is a wholly owned United States subsidiary?

Mr. SPRATT. Yes, that is right.

Mr. MILLER. The one operating in the United States.

Mr. RIVERS. Yes.

So the stock is owned by both nations?

Mr. SPRATT. Yes, that is right, sir.

Mr. RIVERS. How much money did you get, if any, from the United States Treasury in the construction of this line?

Mr. SPRATT. There was no money obtained from the governments of either country.

Mr. RIVERS. You got no money at all. Did you get any guaranty on the paper from any company?

Mr. SPRATT. The oil company guaranteed the bonds of the company.

Mr. RIVERS. Yes. No Federal money from either country was used in the construction, only priorities for the construction material?

Mr. SPRATT. That is correct, sir.

Mr. RIVERS. Is thatcorrect?

Mr. SPRATT. Yes, sir.

Mr. RIVERS. What is the refining capacity in the Seattle—what is the other town, now?

Mr. MILLER. Pacific Northwest.

Mr. HESS. Tacoma.

Mr. SHORT. Ferndale and Anacortes.

Mr. RIVERS. Yes. What is the refining capacity?

Mr. SPRATT. In Washington there is one refinery presently built and in operation that has a capacity, a rated capacity of 35,000 barrels per day, I understand. That is the published capacity. That is the General Petroleum refinery.

Mr. RIVERS. Recently come into production?

Mr. SPRATT. Yes; it came into production last fall. The Shell are building a refinery which will be in production within the next couple of months or so, and it is officially rated at 50,000 barrels.

Mr. RIVERS. Well, now, that coupled with the figures you have given us here will be over 200,000?

Mr. SPRATT. No. This 145,000 barrels includes the 2 refineries in Washington plus the 4 in British Columbia.

Mr. RIVERS. And you deliver—in round figures you have 150,000 barrels potential, and you deliver 80,000 barrels?

Mr. SPRATT. That is right, sir.

Mr. RIVERS. And you say here "if conditions warrant" you could bring it up to a larger delivery capacity in 18 months and possibly maybe a year; is that right?

Mr. SPRATT. That is correct, sir.

Mr. RIVERS. Well, keeping in mind that you have to import oil in that area now by tanker bottoms, do you feel that now is the time to start planning for the implementation of its ultimate capacity, to that growing defense and civilian area?

Mr. SPRATT. Well, we don't have any immediate plans for expanding beyond our present capacity of approximately 150,000.

Mr. RIVERS. If your tanker bottoms were cut off, what would be the condition in that part of the country now? You could only get 80,000 barrels out of approximately 150,000 capacity.

Mr. SPRATT. No. We could pump—I say one-hundred-and-twenty-odd-thousand barrels at the present time.

Mr. RIVERS. How long would it take you?

Mr. SPRATT. We could do that right now.

Mr. RIVERS. You could do that right now?

Mr. SPRATT. Yes.

Mr. RIVERS. You would have a deficiency of roughly 30,000 delivery capacity?

Mr. SPRATT. That is right.

Mr. RIVERS. How long would it take you to get up to 150,000?

Mr. SPRATT. We could do that within 2 or 3 weeks, say a month's time at the outside.

Mr. RIVERS. How long would it take you to get up to 200,000?

Mr. SPRATT. That would probably take us I would say a year or maybe a little better, depending on——

Mr. RIVERS. But there are no plans to increase its delivery capacity at this time for any purpose; is that right?

Mr. SPRATT. That is correct.

Mr. RIVERS. Despite the potential of 500,000 barrels production capacity in the Alberta area?

Mr. SPRATT. Yes; that is right.

Mr. RIVERS. So you have oil there now that you can't deliver, isn't that right?

Mr. SPRATT. You mean oil in Alberta which we could not deliver to the coast?

Mr. RIVERS. You can't deliver it anywhere, because you can't get across the Rockies going to the East and you don't have the facilities coming to the West.

Mr. SPRATT. No. I say we have facilities up to 150,000 at the present time, and I say if there were business to expand it beyond that, it would probably——

Mr. RIVERS. Don't you consider there is business in the Northwest warranting the implementation of your planning or thinking.

Mr. SPRATT. Well, our planning and thinking, I say, is advancing, but I say our present plants, we have nothing——

Mr. RIVERS. You have no plans, other than what you have, by your own testimony.

Mr. SPRATT. Except that I say we are thinking and planning ahead continually, to be ready for expansion if, as, and when it is required.

Mr. RIVERS. Do you think that it is necessary for us to continue to import oil from the Far and Near East with this oil available in Canada, and evidently there is no restriction on its exportation to America?

Mr. SPRATT. I don't feel that I would be in a position to answer that question.

Mr. RIVERS. But you are merely a common carrier?

Mr. SPRATT. That is right, sir.

Mr. RIVERS. But you work for the major oil companies, or the owners of the line.

Mr. SPRATT. I work for Trans Mountain, yes.

Mr. RIVERS. Well, that is owned by the oil companies.

Mr. SPRATT. They have a large interest in it.

Mr. RIVERS. They have "the" interest in it, the running interest. They have the running interest in it, the operating interest. They own most of the stock, don't they?

Mr. SPRATT. Yes, they have a large block of the stock.

Mr. RIVERS. They have the majority of the stock, don't they?

Mr. SPRATT. No; I don't believe they do.

Mr. RIVERS. Now, do you have any plans to build anything to the East, to get the oil into the eastern part of Canada?

Mr. SPRATT. No. Our plans are just for moving oil west from Alberta.

Mr. RIVERS. Are there any natural barriers over which you would have trouble surmounting with the construction of a pipeline to the East?

Mr. SPRATT. Well, there is already a pipeline built eastward from Alberta to eastern Canada.

Mr. RIVERS. How far into the East? Could that deliver to the eastern seaboard of Canada?

Mr. SPRATT. There is a crude line from Edmonton, Alberta, to Sarnia, Ontario.

Mr. RIVERS. I am not familiar with that part of the world. How close is that to the congested area of Canada?

Mr. SPRATT. Well, that is getting down pretty close to the Toronto area. Sarnia is a sort of—one of the refining centers in eastern Canada.

Mr. RIVERS. What does that carry? What is the potential of that line?

Mr. SPRATT. I believe it is roughly 200,000 barrels at the present time, with a potential capacity of something in the order of 300,000, as I understand it.

Mr. RIVERS. Well, this line plus your line is capable of taking out the reasonable production, conservationwise, from that field?

Mr. SPRATT. Yes. They would be roughly capable of taking production——

Mr. RIVERS. The 500,000-barrel production.

Mr. SPRATT. Which is the potential at the present time. That potential has been increasing pretty rapidly over the last few years.

Mr. RIVERS. That is all, Mr. Spratt. Thank you.

Mr. HÉBERT. Mr. Hess.

Mr. HESS. Mr. Spratt, along the same line of the questions that Mr. Rivers asked you with reference to your line running east—or running west, is there any reason to increase your capacity at the present time over the 120,000 barrels a day that it will now carry, when you don't have refining facilities to take care of the oil?

Mr. SPRATT. I would say the refining facilities are in the order of 150,000 barrels or will be within the next month or so.

Mr. HESS. Not in the Seattle and Tacoma area?

Mr. RIVERS. Yes.

Mr. HESS. Oh, no. There are just two refineries there.

Mr. SPRATT. The Washington refining capacity, I say, is about 85,000 barrels per day, and the balance is in British Columbia.

Mr. HESS. Yes.

Mr. RIVERS. I was speaking of that area served by the pipeline.

Mr. SPRATT. Yes.

Mr. HESS. Which you now implement by tanker bottoms.

Mr. SPRATT. Yes; that is right.

Mr. HESS. From some other source.

Mr. SPRATT. Yes.

Mr. HESS. So he does need it.

Mr. HÉBERT. All right.

Mr. Miller?

Mr. MILLER. No questions.
Mr. HÉBERT. Mr. Short.
Mr. SHORT. Your present deliveries are averaging 80,000 barrels a day?
Mr. SPRATT. That is right, sir.
Mr. SHORT. And perhaps will reach 100,000 barrels by the beginning of the fourth quarter of this year?
Mr. SPRATT. Yes; as near as we can estimate.
Mr. SHORT. Now, these deliveries go to the six refineries to which your line is attached?
Mr. SPRATT. Yes, sir.
Mr. SHORT. Four in British Columbia and two in the State of Washington?
Mr. SPRATT. That is right.
Mr. SHORT. How many of the 80,000 barrels go to the British Columbia and how much of the 80,000 barrels go to the State of Washington?
Mr. SPRATT. At the present time there are just over 50,000 going to British Columbia and about, I think it is roughly 26,000 to the State of Washington.
Mr. SHORT. Twenty-six thousand. Most of that goes to the Ferndale plant?
Mr. SPRATT. It all goes to Ferndale. Shell starts taking deliveries next month.
Mr. SHORT. Actually, there has been no delivery up to date at Anacortes?
Mr. SPRATT. That is correct.
Mr. SHORT. But at the present time you are sending 26,000 barrels a day, or daily?
Mr. SPRATT. Yes.
Mr. SHORT. Into Ferndale?
Mr. SPRATT. Yes.
Mr. SHORT. That is all.
Mr. HÉBERT. Mr. Courtney.
Mr. COURTNEY. Then the increase which you plan is to serve the refineries at Ferndale and Anacortes; is that correct?
Mr. SPRATT. Yes; it is largely there.
Mr. COURTNEY. Largely?
Mr. SPRATT. There is a little expansion going on in the British Columbia refineries, but I say the big increase is in Washington at the present time.
Mr. SHORT. And what will the total be when you start delivering to Anacortes, or when that refinery is completed?
Mr. SPRATT. Well, we estimate approximately 100,000 barrels per day.
Mr. SHORT. To the two refineries in Washington?
Mr. SPRATT. No. There would be roughly I would say as a starter maybe 50,000 barrels to Washington and about 50,000 barrels to British Columbia.
Mr. RIVERS. May I ask you one other question—Mr. Chairman?
Mr. HÉBERT. Mr. Rivers.
Mr. RIVERS. Mr. Spratt, has anyone in the Defense Department ever indicated to you what might be the need in that area by way of transportation in the event of an emergency?

Mr. SPRATT. Not since I joined the company. I joined them about a year and a half ago, and there hasn't been any word from the Defense Department since I have joined them.

Mr. RIVERS. I see, sir.

Mr. SPRATT. In that regard.

Mr. RIVERS. Thank you, sir.

Mr. HÉBERT. Thank you very much——

Mr. COURTNEY. You mean the Defense Department of what government?

Mr. SPRATT. Well, either government, sir.

Mr. HÉBERT. All right. Thank you very much, Mr. Spratt.

Mr. SPRATT. Thank you.

Dr. Miller, please.

Mr. HÉBERT. Doctor, the same procedure will be taken as with the previous witness. You read your prepared statement to the committee and then they will ask you questions that they desire to ask.

Mr. MILLER. All right.

Mr. HÉBERT. You may proceed.

STATEMENT OF FRANK G. MILLER, PROFESSOR OF PETROLEUM ENGINEERING AT STANFORD UNIVERSITY, STANFORD, CALIF.

Mr. MILLER. Members of the special subcommittee of the Armed Services Committee:

My name is Frank G. Miller. I am professor of petroleum engineering at Stanford University, Stanford, Calif., and an industrial consultant in petroleum engineering. I am a registered professional engineer in the branch of petroleum in the State of California and a lieutenant colonel in the Ordnance Corps Reserve of the United States Army, assigned to research and development.

I am appearing today at the request of the Western Oil and Gas Association.

I was graduated with a bachelor of science degree in petroleum engineering from the University of California in 1933 and awarded my master of science and doctor of philosophy degrees by the same institution in 1939 and 1950 respectively, with mechanical engineering as the field of study and petroleum production as the field of research. Following graduation from college in 1933, I spent 3 years in refining and production with a major oil company in California. Subsequently, I was employed as a petroleum engineer with the Petroleum and Natural Gas Branch of the United States Bureau of Mines for a period of 12 years.

During World War II, I was an Army ordnance officer assigned to industrial activities. I have conducted evening lectures in oil reservoir engineering at the University of California since 1947 and have been on the staff of Stanford University since 1952.

Mr. RIVERS. May I ask him one question there, Mr. Chairman?

Mr. HÉBERT. Yes, sir.

Mr. RIVERS. Does that mean you have geological training and information, or only production?

Mr. MILLER. I would say partially, sir. I am not a geologist.

Mr. RIVERS. Yes.

Mr. MILLER. Specifically, I am a petroleum engineer and a petroleum engineer is supposed to have some knowledge of geology.

Mr. RIVERS. But you are not a geologist, other than what you have picked up?

Mr. MILLER. I have had courses in geology.

Mr. RIVERS. Oh, you have?

Mr. MILLER. Yes, sir.

Mr. RIVERS. All right. That is what I wanted to find out.

Mr. MILLER. Yes, sir.

Mr. HÉBERT. Proceed.

Mr. MILLER. The title of my statement is "The Oil Productive Capacity of California: Record of Production."

California has been the source of more than one-sixth of all the oil produced in the United States since 1940. During the 10-year period ending at the close of 1954, the trend in the annual rate of crude oil production in the State was generally upward.

In 1954 the quantity of crude oil produced was 356 million barrels or about 1.0 million barrels daily. This rate of production is about 22 percent greater than the average for the years of World War II, 1942 through 1945.

The California oil industry has been successful in producing crude oil at a rate of about 1 million barrels a day in the past few years. A study of the petroleum resources of the State indicates that the industry can continue to maintain this rate during the foreseeable future. The ability of the oil industry to produce crude oil at desired rates depends, of course, on its oil reserves. The meaning of this term "oil reserves" and of other terms pertaining to oil not yet produced from naturally occurring underground reservoirs are essential to an understanding of California's oil-productive potential.

RESOURCES AND RESERVES

The simple concept of a volume of liquid petroleum still existing in its underground environment is grossly inadequate as a description of "oil reserves." Economics must be considered. In this connection a report to the National Petroleum Council, made by the Committee on Oil and Gas Availability, includes this statement:

> An inquiry as to available supplies requires an answer to economics rather than physical terms. It must deal with the ability to supply a commodity at a price which makes it of value. The mere existence of a mineral in a natural state does not mean that it is available * * *.
>
> A cubic mile of sea water has about $93 million in gold and $8.5 million in silver. These precious metals in the ocean are enough to make every person in the world a millionaire. They have not made us rich for a simple reason. The cost of extracting them exceeds their value.

The report goes on to say that the oil industry almost always deals with known recoverable reserves. "Proved reserves" or "economically recoverable reserves" are the stock in trade of the oil company. They represent only the oil that can be produced from discovered fields by the current methods of operation in use in those fields at present levels of costs and prices. They do not account for the probability of improved technology or of new discoveries.

An eminent petroleum geologist, in discussing the availability of crude petroleum, states that—

> The reserves consist of the oil and gas that are now available for use. The resources, which are always far in excess of the reserves, include the reserves, the prospective undiscovered reserves, and any substances from which petroleum

could be derived, either by one or by both of (1) present or improved technology and (2) present or more favorable economic conditions. Technology implies ideas, know-how, concepts, machines, methods, and principles; economic conditions imply availability of adequate capital, incentive, profit, skilled labor, and political climate.

In the light of these definitions, the estimated economic ultimate oil recovery of a field is the sum of the total quantity of oil produced from the field to date plus the estimate of proved reserves. The ratio of this sum to the total quantity of oil estimated to have been present in the oil-productive rock of the field just prior to the drilling of wells is termed the oil recovery factor.

More and more geological information becomes available with the normal program of drilling additional wells in the field. Continual study of the rocks and fluids penetrated by the drilling bit and the correlation of data collected among different drilling wells provides a fund of knowledge whereby the oil company can improve its estimates of the quantity of oil in place initially. This quantity affects the recovery factor. Petroleum engineers, as a part of their occupational duty, strive to increase oil-recovery efficiencies by improved methods of production. Their results in this endeavor are reflected in changed oil recovery factors.

The petroleum engineer improves oil-recovery efficiencies or increases oil-recovery factors through advances in oil-production technology. His success and the success of the industry in this respect forms the main thesis of this statement. This definition of the scope of this statement is not in any way intended to underrate the major effect of new discoveries on estimates of proved reserves.

The accomplishments of the national oil industry in discovering new sources of oil and in improving technology is indicated by a series of "prophesies and realities" reported by the Independent Petroleum Association of America. In part, these are as follows:

In the year 1934 the prophecy was total future production only 5.7——

Mr. SHORT. No; 1914.

Mr. MILLER. I beg your pardon, 1914. The prophecy, total future production, only 5.7 billion barrels. Reality: 42 billion barrels produced 1914 through 1952, or 7 times the prediction.

In 1931, the prophecy: Must import as much foreign oil as possible to save domestic supply. The reality: During the next 8 years, imports were discouraged and 14 billion barrels found in the United States.

1939: United States oil supplies will last only 13 years. Reality: 13 years ended in 1952 with new oil found exceeding production by 15 billion barrels during the period.

1947: Sufficient oil cannot be found in United States. Reality: 5.1 billion barrels found in 1951, largest volume in history and more than twice United States consumption.

The oil industry in California is certainly representative of the oil industry nationally with respect to a vigorous approach to its problems. Doubtless, similar prediction-and-performance data apply to California.

Mr. SHORT. Just a question there: Of the reality under the date 1947—5.1 billion barrels found in 1951, the largest volume in history and more than twice United States consumption.

Is that an accurate statement? Five and one-tenth billion barrels, twice our consumption?

Mr. MILLER. Sir, I have quoted that statement, from the Independent Petroleum Association of America. That is my source.

Mr. SHORT. How much do we consume yearly? In 1951 how much did we consume?

Mr. MILLER. I don't know that figure, sir.

Mr. SHORT. That figure is inaccurate. I think that figure is inaccurate. But go ahead. We will check it.

Mr. MILLER. Research designs and develops new tools, and technology applies them in the field. Researchers have shown theoretically and in the laboratory that oil-recovery efficiencies should increase if water is injected in large quantities under pressure below the oil in a natural underground oil reservoir and used to force the oil toward producing wells. The reservoir is the porous oil-productive rock containing the oil. These scientists have found also that oil recoveries should increase if gas under high pressure is injected above the oil in an oil reservoir and applied to push the oil downward toward the bores of producing wells. Application of these techniques in the field is referred to usually as secondary recovery practices if: (*a*) an appreciable fraction of the economically recoverable oil in the field already has been produced when gas or water injection is first undertaken, and (*b*) if the pressure of the oil underground has declined to an intensity substantially below its initial value. If the pressure of the oil has not so declined, the injection of gas or water may be viewed as a part of the primary recovery operations.

At this point I would like to ask the permission of the chairman, if I may, to show this exhibit I have brought along.

Mr. HÉBERT. You may do so.

Mr. MILLER. Thank you, sir.

Mr. RIVERS. Mr. Chairman, you are going to also explain the need for that in the primary recovery, along with it?

Mr. MILLER. The need for which, is this?

Mr. RIVERS. The injection of this catalytic idea in the primary recovery.

Mr. MILLER. Yes, sir, I will try to do this with a model, if I can.

Mr. HÉBERT. All right.

Mr. MILLER. I have an assistant with me who will help me demonstrate.

This exhibit represents an idealized model of an oil productive underground structure. The simplest type of geological structure in which we find oil in nature is called an anticline. It has the shape of an inverted salad bowl. The crockery in the bowl would be representative of the porous rock that contains the oil.

Now, we have taken a slice through the bowl, and this is what you see in the model.

This sand at this point may be at some depth, say of the order of 10,000 feet. Below that depth we will find only water, normally, in the oil-bearing rock.

On either side, above and below—rather than on either side, above and below the oil-bearing rock will be some other rock material that will be essentially impermeable to the movement of fluids from the oil-bearing rock to any rocks surrounding. In other words, these strata confine the oil to the pore spaces within the oil-bearing rock itself.

Most frequently, after we have determined the boundaries of an oil-field or a pool——

Mr. RIVERS. That is done by outpost wells?

Mr. MILLER. This can be done by outpost wells, by geological surveys, and there are other techniques. Drilling is the only thing that you are really certain about.

Mr. RIVERS. Outpost wells determine the geology, or the geological prophecy?

Mr. MILLER. Yes, sir.

Mr. RIVERS. Or estimation?

Mr. MILLER. Yes, sir.

I have some more to say about this in a moment.

Of course the more wells you drill the more you learn about the structure, and if we can correlate what we gain in this well with information we gain over here, then we know something more about the material in between the two wells. In other words, this would help us to determine the amount this dips, and so on.

Most frequently an oil-bearing structure of this type—and I would like to emphasize that this is the simplest type, but it will serve our purpose here today—contains a gas cap; that is, at the crest of the structure the sand will be filled with gas and water. The water we call interstitial water. You can call it anything, perhaps, you like. But it is the water that we think is in the oil-bearing rock before the oil came in.

Beneath this gas cap is the oil zone itself.

Now, in our model the oil zone is represented by a red liquid, and beneath the oil zone is water, represented by a blue liquid. This is actually a dyed water and the liquid is a hydrocarbon that has been dyed.

Now, what I hope to demonstrate with this model is various types of oil-recovery mechanisms. And the first of these is the solution gas-drive mechanism.

The oil underground contains gas dissolved in solution. When we penetrate the oil-bearing rock with a well, we cause a pressure differential between the oil at points remote from the well and the well bore itself. This pressure differential causes a movement of the fluids toward the well bore. And this is how it is accomplished. In the beginning the gas expands in place, comes out of solution and expands and in making room for the gas, oil must be pushed into the well bore. As the production continues, as the well continues to produce oil, gas will accompany it and larger and larger quantities of gas will accompany it and the gas-oil ratio, as we call it, will increase.

Now, this type of drive, this solution gas drive or depletion drive, as it is called in the industry sometimes, is the least efficient, theoretically, of the various drives that I am going to discuss.

I wonder if you would show that first, Mr. Thompson?

There is gas dissolved in this liquid oil, and as he turns the valve and produces oil into the tank, gas evolves from the solution. The light colored spots you see here (in the oil stratum) are indicative of the gas that is coming out of solution. You might see at the same time that this very small gas cap we had originally in this model is expanding as production proceeds.

Now, what you can't tell by the model is the fact that the gas-oil ratio is increasing; as the production proceeds, they are getting greater and greater quantities of gas for each unit quantity of oil produced.

Mr. RIVERS. And that is the reason you see these flares all over these gas fields, to get rid of that gas?

Mr. MILLER. Well, I think the answer to that would have to be yes, but the volume of gas that is disposed of in that way I think is relatively small.

Mr. RIVERS. I mean they conserve all they can. What they can't, they burn?

Mr. MILLER. Yes.

I just made a mark for the initial oil-water contact, because we are going to flood this in a moment.

You have some indication here of the amount of oil that we have recovered by this drive.

Our next step now is to inject gas into the gas pipe, and this will be a gas-injection operation. We will inject gas under pressure into the gas-cap region of this field and produce additional oil.

Would you do this?

Mr. RIVERS. Is that practiced in California?

Mr. MILLER. In a number of fields; yes, sir.

You might recall that in my prepared statement I defined secondary recovery in the way I intended to use it. If we had injected this gas initially, we would look upon this probably as a primary recovery operation. In injecting it later, we look upon it as a secondary recovery operation. As I am demonstrating it, it is a secondary recovery operation.

Mr. RIVERS. And the primary recovery, where you inject the gas or the water, whatever you inject, is where the initial pressure is not present, to pull it out?

Mr. MILLER. This isn't quite right. If we inject the gas in the beginning stages of production, when the pressure in the oil is still high, at or near its initial intensity. If we had depleted the field partially, say, by this inefficient solution gas drive and then injected gas, that would be a secondary recovery. We still can recover more oil from this field by a water drive. This is our initial water-oil contact. And we are going to inject water, flush the water upward through the oil zone and produce more oil through the well.

Mr. RIVERS. During that original process, what is happening to this water down here?

Mr. MILLER. It depends on the quantity of the water pressure and the pressure of the water. If there is much water present and if it is under high pressure, as the field becomes depleted, the water will move upward.

Mr. RIVERS. On its own?

Mr. MILLER. On its own. We call that a natural water drive. What he is accomplishing now is an artificial water drive.

Mr. RIVERS. I see.

Mr. MILLER. I think we are going to run out of capacity here. [Laughter.]

Mr. MILLER. I might say now with respect to the model—we only have one well and we can't show you all the maneuvers that might be otherwise possible. But I would like to emphasize, if I haven't

done so, that the solution gas drive is the least efficient of these three mechanisms. In fact, I would like to come back to my statement. I see that is the next thing I say.

Mr. HÉBERT. All right.

Mr. MILLER. Thank you, Mr. Thompson.

I am returning to the first paragraph, beginning on page 5.

Primary methods of oil production probably recover no more than 20 to 30 percent of the oil initially present. If a reservoir is susceptible to secondary recovery methods and if economic conditions warrant the application of these methods, the total recovery may be doubled.

Secondary recovery methods have been applied to a very limited extent in California to date. Primary gas injection operations are being carried out successfully in a number of fields. Secondary water flooding operations, involving the injection of water into the oil-productive rock to promote greater oil recovery, are still in their initial phase in California.

The greatest benefits of applying secondary recovery methods depend on the operation of each field or pool as a unit, as I was doing with this model a moment ago. Unit operation refers to the joint development and operation of an oil-field or pool. The intent is to combine separately owned tracts in such a manner that they may be treated from an engineering standpoint as a single property. A joint and common interest is established for carrying out exploitation of the unit as efficiently as possible to attain the maximum economic recovery of oil.

As of December 31, 1954, there were 12 fully unitized projects in California; they contributed about 11 percent of the State's total production of oil in 1954. The estimated proved reserves of crude oil in the State were 3.9 billion barrels as of the same date, and the cumulative production was 10.1 billion barrels.

Nearly all the oil produced in California comes from fields that perform under the mechanism of a solution gas drive. This is a natural oil recovery mechanism and is sometimes termed a depletion drive. Briefly, the gas dissolved in the oil evolves as the field is produced, with the normal decline in oil pressure. The expanding gas displaces oil and forces it into the well bores. This mechanism is considerably less efficient than the mechanisms resulting from the injection of water (water flooding) or the injection of gas (gas drive) into the reservoir. These latter two mechanisms are operative in secondary recovery projects. Experience gained in the midcontinent and eastern oil-producing regions indicates that they recover roughly twice as much oil as the so-called depletion drive, depending on the prevalent field conditions, the availability of injection fluids, and the economic situation.

Probably upward of 90 percent of the oil produced in California is produced by depletion drive. It is therefore my considered opinion that widespread application of secondary recovery methods in California, under conditions of unit operation, would cause the proved reserve figure of 4 billion barrels as of December 31, 1954, to become more realistically a reserve of approximately 8 billion barrels. This figure of 8 billion barrels does not include additional oil that would become available through new discoveries. It is based on the foregoing analysis and on the results of secondary recovery operations in

the midcontinent and eastern oil-producing regions of the United States.

Mr. SHORT. Doctor, do you discuss the cost of these secondary recoveries of the two methods, water flooding and gas drives?

Mr. MILLER. No, sir.

Mr. SHORT. Could you give us a rough estimate of how expensive this secondary recovery is, whether it is economically justified?

Mr. MILLER. I could say this——

Mr. SHORT. I think I understood you to say that the gas drive was the least efficient.

Mr. MILLER. The solution gas drive.

Mr. SHORT. The solution gas drive.

Mr. MILLER. This the first one where the gas comes out of solution in the liquid.

Mr. SHORT. Yes.

Mr. MILLER. The gas cap drive is an efficient mechanism. That is where the gas cap expands.

Mr. SHORT. Of course it is reassuring, your estimate of 8 billion as against 4 billion barrels. That is fine. But I just wondered how expensive it was going to be to recover this.

Mr. MILLER. Well, I feel this way about it, sir; I think the philosophy of the oil industry as a whole for many years has been to attempt new discoveries wherever possible because you have the greatest return.

Mr. SHORT. That is right.

Mr. MILLER. I think, on the other hand, that secondary methods may not be quite so glamorous and may not be quite so rewarding. In fact, it is almost a certainty, I think, that the cost per barrel of production of secondary recovery oil would be less than that for primary production, if you include the cost of discovery. But I am hesitant to try and detail this because there are so many, many factors involved, especially when we talk about geological conditions in California, for example. We have, in comparison to the rest of the Nation I think heavier oils on the average.

Mr. SHORT. Over the Nation as a whole?

Mr. MILLER. Yes.

Mr. SHORT. A tremendous amount of oil has been, though, produced through secondary recovery.

Mr. MILLER. Yes, sir.

Mr. SHORT. And while it is more expensive, it is a mighty good thing to have that backlog, particularly in time of emergency.

Mr. MILLER. I don't want to imply that this is more expensive. It may not be more expensive per barrel produced. That is the point.

Mr. RIVERS. No; it is not.

Mr. MILLER. Yes.

Mr. SHORT. That is what I wanted to get.

Mr. RIVERS. If you take into consideration your initial expenditure.

Mr. MILLER. That is right.

Mr. RIVERS. It wouldn't be.

Mr. SHORT. Yes; because it is a certainty you know you have some oil there.

Mr. MILLER. That is the point.

Mr. SHORT. You are not taking the long chance or long shot.

Mr. MILLER. That is the point; yes, sir.

Mr. SHORT. You know that the oil is there. It is a matter of just getting it out. But I was wondering about the expense of this secondary recovery.

Mr. MILLER. Well, this, to the best of my knowledge, is a problem that is now subject to a great deal of study in this State.

Mr. SHORT. Yes. You stated it has been tried only to a limited extent thus far.

Mr. MILLER. Yes, sir; that is true, sir.

Mr. SHORT. But you are experimenting with that and carrying on your research?

Mr. MILLER. Yes, sir; very definitely.

Mr. RIVERS. Could I ask him one question? Doctor, do you consider that the methods used in California by which they have extracted a larger percentage of their oil, their recoverable reserves, than they would normally do because of these emergent conditions—do you consider those as having indicated any injury, if any, to the fields? I think they have gone up to 25 percent.

Mr. MILLER. I am not sure I understand the question. Would this be right——

Mr. RIVERS. Do you think the flush recovery that they have applied in the last few years has caused any injury to the fields?

Mr. MILLER. I don't think so; no, sir.

Mr. RIVERS. You don't think so?

Mr. MILLER. No. I think that the production practice in the State has been such that there is no permanent injury from these, sir.

Mr. RIVERS. Do you have any concern over no proration in California?

Mr. MILLER. Do I have any concern over that?

Mr. RIVERS. Yes; or am I getting you in a political field that you want to stay clear of?

Mr. MILLER. I think you are getting a little out of my field, sir.

Mr. RIVERS. Yes. But you are still in the oilfield, aren't you?

Mr. MILLER. Yes, sir.

Mr. RIVERS. Let me ask you about multiple recovery.

Mr. MILLER. Yes, sir.

Mr. RIVERS. You go down to another sand——

(Mr. Miller nods.)

Mr. RIVERS (continuing). With the same shaft——

Mr. MILLER. Yes, sir.

Mr. RIVERS. And then what happens there?

Mr. MILLER. Well, sometimes they are produced at the same time; two strata may be produced at the same——

Mr. RIVERS. Are there two pipes?

Mr. MILLER. Well, there may be several pipes.

Mr. RIVERS. In the same shaft?

Mr. MILLER. Same shaft. Or sometimes we will produce selectively from various strata.

Mr. RIVERS. Well, now, how do you conserve the pressure from one sand to the other when you have two shafts there?

Mr. MILLER. Well, it would not be an efficient operation if you had a considerably lower pressure in one strata than another. And had them both open. Because one would then become a thief sand, as we call it, and would start robbing the other.

Mr. RIVERS. Do you only utilize that whenever you have a shortage of materials, that multiple concept, as the most practical way of getting it? The most desirable way is to have different wells, isn't it?

Mr. MILLER. This isn't necessarily so. You may be able to produce one strata first and then the other. I mean, as a matter of fact, it may be economically feasible for an operator to produce a more prolific stratum before he produces a less desirable stratum.

Mr. RIVERS. And then he completes that and goes on down?

Mr. MILLER. Yes, sir.

Mr. RIVERS. That always disturbed me, when I heard about multiple recovery. I never did quite understand it.

Mr. HÉBERT. Mr. Miller?

Mr. GEORGE P. MILLER. No.

Mr. HÉBERT. Mr. Short?

Mr. SHORT. No. A very interesting presentation.

Mr. RIVERS. It is a fine statement.

Mr. MILLER. Thank you very much.

Mr. GEORGE P. MILLER. I want to congratulate the gentleman for his statement.

Mr. HÉBERT. Let me ask you one question. Doctor, there was an expression in a quote which you gave that intrigues me a bit, and Mr. Rivers sort of touched on it, and that was on page 3, in which you describe, or rather you quoted geologists on all these factors involved in getting the oil, and then at the last: "and political climate." Exactly what is meant by that?

Mr. MILLER. I was almost inclined, sir, to telephone that man and ask him what he meant by that.

Mr. HÉBERT. That intrigued me, that expression. I just wondered, too, what he meant by that. He puts that in with all the economic factors. You mean to say there is politics in getting oil out of the ground?

Mr. MILLER. I should think—I mean——

Mr. RIVERS. That means they don't want any antitrust action when they start price fixing. [Laughter.]

Mr. HÉBERT. You can always depend on Mr. Rivers to have the answer, whether it is right or wrong.

Mr. MILLER. Well, I was going to say that I was interpreting this in the sense that the political climate, I would think, for uranium is good right now.

Mr. HÉBERT. The political climate for uranium is good.

Mr. MILLER. I would think so.

Mr. HÉBERT. Thank you very much, Doctor.

Mr. GEORGE P. MILLER. Mr. Chairman, I think it is one of those sort of indefinable things, but I am certain that those of us who have had experience in State legislative work and in the field know that there must be some relation. Because we all have a large number of friends who somehow or another find it necessary to be in either the State capital or Washington connected with the oil industry.

Mr. SHORT. You don't have to be able to define it. You feel it. [Laughter.]

Mr. HÉBERT. Thank you very much, Doctor.

Did Mr. Merryweather get here yet?

Well, the committee will stand in recess for 10 minutes.

(Recess taken.)

Mr. HÉBERT. Because of developments over which the committee has no control, it will be necessary to recess now until 2:30, at which time we will have the final witnesses, Mr. Merryweather and Mr. Petersen, unless there are some other matters now.

Incidentally, I think this would be a proper time—in a discussion yesterday, we understand there are some documents, supporting documents, that should be filed with the report and be made part of the report. If you have those documents now, we will be very happy to receive them.

Mr. SIMMONDS. Yes, Mr. Chairman.

My first name is Norman.

On behalf of the Western Oil & Gas Association, we would like to file with the committee a statistical record of the California crude-oil production, prepared by the conservation committee.

Mr. COURTNEY. Is that a State organization or is it a trade organization?

Mr. SIMMONDS. It is a trade organization.

It shows the production by fields and by companies, in California. It has a map of the oilfields of California and other historical discovery data.

Mr. HÉBERT. Without objection, it is made part of the record.

(The matter referred to will be found in exhibit 9.)

Mr. COURTNEY. Mr. Simmonds, if there is any copyrighted material in this presentation, we would have to have a release of the copyright. I haven't looked at it, but I always ask the question to be sure.

Mr. SIMMONDS. There is not, Mr. Courtney.

Mr. HÉBERT. Does anybody have a statement to file with the committee?

(No response.)

Mr. HÉBERT. The committee will stand in recess until 2:30.

(Whereupon, at 11:10 a. m., a recess was taken until 2:30 p. m.)

AFTERNOON SESSION

Mr. HÉBERT. The committee will come to order.

Mr. Merryweather, please.

Sit down right there, Mr. Merryweather.

Mr. Merryweather is here at the request of Governor McFarland of Arizona.

Mr. Merryweather, will you convey to the Governor the committee's best wishes?

Mr. MERRYWEATHER. I will do so with pleasure, Mr. Hébert.

Mr. HÉBERT. You may proceed. And you will read your statement and then the committee will ask you questions after you have completed the statement.

Mr. MERRYWEATHER. Very well, sir.

STATEMENT OF HUBERT O. MERRYWEATHER, OF PHOENIX, ARIZ., OFFICIAL REPRESENTATIVE OF GOV. ERNEST W. McFARLAND OF ARIZONA ON THE INTERSTATE OIL COMPACT COMMISSION, APPEARING ON BEHALF OF ARIZONA

Mr. MERRYWEATHER. Mr. Hébert and gentlemen, my name is Hubert O. Merryweather, of Phoenix, Ariz. I am the official representative of Gov. Ernest W. McFarland on the Interstate Oil Compact Commission, and I am appearing before this subcommittee on behalf of Arizona. May I express the appreciation of Governor McFarland to this committee for being able to come before you and give you some of our views.

It is a pleasure to have the opportunity to express Arizona's deep interest in the development of this proposed crude oil common carrier pipeline.

As you know, our State is one of the fastest growing States of the Nation and our demand for petroleum products is increasing rapidly. So the possibility of obtaining a crude pipeline in our State is of immense importance.

In the event of a national emergency we wish to be assured of a continuing supply of petroleum products with a minimum amount of difficulty and expense and believe that this proposed pipeline is the answer.

The greater percentage of our population is served by one railroad, the Southern Pacific, which runs through the cities of Tucson, Phoenix, and Yuma. The tremendous load put upon that line during World War II makes us keenly aware of the importance of transportation during times of emergency. Evidence of this problem is obvious by looking at figures of shipments of oil and oil products to the west coast during the last World War, which at one period exceeded 160,000 barrels per day.

We are thankful for the new products pipeline being constructed by the Southern Pacific Pipe Line Co. between El Paso, Tex., and southern California, but it does not answer all our needs and, therefore, I should like to make a few comments relative to a proposed pipeline for crude oil from west Texas to southern California which would be routed through Arizona. If crude oil is transported by a pipeline common carrier across Arizona, it will not only supplement possible oil requirements on the west coast but will also permit the construction of refineries in Arizona capable of handling a good portion of our requirements.

In peacetime such refineries would be important to us for the following reasons:

(*a*) With local refineries having a steady basic supply of crude, it would provide a market for new oil production brought in by discoveries in Arizona. At present Arizona has no oil production, although it was just this year we have been fortunate in obtaining our first commercial gas well. One reason that there has been a hesitancy to develop oil in Arizona is the lack of facilities to process oil within the State. The establishment of a refinery would also establish a market and be a real stimulant to oil development within the State.

(*b*) Secondly, we believe such a refinery would provide us with certain byproducts such as asphalt for highways and chemicals for

fertilizers at a better price than we now must pay. Our rapid highway expansion and our No. 1 source of income, agriculture, make both of these items very important.

(*c*) We think a refinery might enable our citizens to get a better break on gasoline prices.

At the present time the posted tank wagon or wholesale gasoline price of 80–87 octane gas in Phoenix is 22.6 cents per gallon, exclusive of taxes. The comparative price in Los Angeles is 19.4 cents, while the price of equivalent gasoline is 14.7 cents in Houston, 14.8 cents in Dallas, and 16.8 cents in El Paso. These prices are puzzling to us since they do not seem to be governed by freight differentials and since Los Angeles, where oilfields and refineries are located, has a higher price than similar places in Texas. If this price differential in two oil producing and refining areas is due to crude differences, then our people as well as the people of California should be entitled to the benefit of lower prices.

In wartime such refineries would be a true asset because:

(*a*) There is an increasing tendency to shift our defense industries inland rather than have them concentrated on the comparatively vulnerable west coast. It seems obvious that in the event of disaster our petroleum supplies should also be safeguarded and such Arizona refineries would certainly help in that respect in providing petroleum products for Douglas Aircraft, AiResearch, Hughes Aircraft, Reynolds Metals, Goodyear, and numerous other vital war industries.

(*b*) It would be a local source of supply for the oil products required by the numerous airbases and other military installations throughout Arizona.

(*c*) It would relieve in part the serious transportation problems faced during the last war and anticipated in any future emergency in the movement of petroleum products, fertilizers and chemicals, as well as all other war materials and personnel.

From the press reports of yesterday's hearing, it appears that Mr. Minckler of the General Petroleum Co. and other refinery representatives were opposed to a pipeline if built with any Government assistance.

We believe that the decision as to the advisability of building such a pipeline should rest principally upon military requirements. However, we think that the committee should be made aware of the fact that Standard Oil of California, Standard Oil of New Jersey, the Texas Co. and the General Petroleum Co. through its parent company, Socony-Vacuum, are the owners of Aramco, the Arabian-American Oil Co., which holds concessions in the Middle East from where oil is presently being shipped to the United States, including the west coast, and if any company ever had plenty of Government aid in making oil available, it was Aramco and its parent companies. For the story of that aid as determined by a United States Senate investigating committee, I refer this committee to the additional report of the Special Committee Investigating the National Defense Program pursuant to Senate Resolution 71, dated April 1948, and I call particular attention to the conclusions of the committee on page 32 thereof, which in part are as follows:

Would you like to have some copies of this, Mr. Chairman?

Mr. HÉBERT. Yes.

Mr. MERRYWEATHER. I have sufficient copies here. [Reading:]

1. The United States Government extended direct and indirect lend-lease and other assistance to the Saudi Arabian Government in excess of $99 million, of which only approximately $27 million is likely to be recovered.

2. These advances of direct and indirect lend-lease and other assistance to the Saudi Arabian Government were initiated for the most part by the Arabian-American Oil Co., its affiliates, and parent companies, for two reasons: First, in 1941, to relieve themselves of the onerous burden of supplying large funds to meet the budgetary requirements of Saudi Arabia; and second, in 1943 direct United States lend-lease was requested by the company to eliminate the danger of its concessions and earnings falling under the financial control of the United Kingdom.

3. To induce the grant of aid to the Saudi Arabian Government, the Arabian-American Oil Co. offered to sell to the United States under a proposal to the President dated April 16, 1941, at prices based on fuel oil at 40 cents per barrel. Under another proposal made February 8, 1943, as a further inducement to the United States to extend direct lend-lease to Saudi-Arabia, the company offered to set aside reserves and to sell its petroleum products "at prices well under world prices" or at "cost plus a nominal profit."

4. When the United States Government needed oil because of its war demands, notwithstanding these prior proposals, the companies offered the Navy fuel oil at $1.05 a barrel on a take-it-or-leave-it basis. The Navy was forced to buy the oil on these terms. The committee is of the opinion that the oil companies were under a moral, if not a legal, obligation to disclose to the naval procurement officers their previous proposals for the sale of oil submitted to the President. The oil companies exploited the Government by exacting high prices for their products despite the high expenditures and assistance granted to Saudi Arabia at the companies' behest to protect and preserve the companies' concessions.

5. The committee is of the opinion that in paying $1.05 a barrel the United States Government was overcharged between $30 and $38 million on sales made to the Navy by Aramco and its affiliates, between January 1, 1942, and June 30, 1947, by payment of prices higher than those the oil companies had a right to insist on in the light of their previous dealings with the United States.

I have a few copies of the entire report which are available for distribution and would like to have one copy entered as an exhibit herein.

In conclusion, I would like to say that this line will be of tremendous importance to Arizona and the Nation in both peace and war because—

1. It will enable Arizona to get refineries and thus aid oil exploration and our overall economy.

2. It will relieve transportation congestion in times of emergency and enable us to more efficiently supply our local war industries in our contribution to the Nation's effort.

3. It will be in line with the national policy of dispersal of critical industries, including refineries, in preparation for any emergency.

Mr. HÉBERT. Thank you very much, Mr. Merryweather.

Mr. Rivers.

Mr. RIVERS. Let Mr. Short start off.

Mr. HÉBERT. Mr. Short.

Mr. SHORT. This particular witness has brought out some points that haven't been touched upon in previous testimony. I think all the witnesses that we have heard prior to the one now on the stand have very carefully and very well prepared a good case. There is such unanimity of opinion and views expressed by all the preceding witnesses and such similarity in the language and phraseology that I am inclined to think it is a remarkable coincidence that their testimony would be so much the same and down the line. You would expect some differences of opinion expressed. We haven't gotten those differences until just now.

I think, Mr. Merryweather, this committee is quite cognizant of the fact that Russia has moved many of her large industries back of the Ural Mountains. Of course there is no spot on earth invulnerable to attack today, because the remotest spot on earth from Los Angeles is only a few hours away. But after recognizing that fact, I think that any men with military experience and certainly anyone with commonsense knows that a dispersal program is a rather wise one in this atomic age, the atom and the hydrogen bomb. And I like the third point you brought out here: in line with the national policy of dispersal—and we are supposed to have a national policy of dispersal in our Department of Defense. I have listened to it expounded by the Secretary of Defense as well as Secretaries of the different departments. And not only dispersal of critical industries, but that includes refineries, in the preparation for any emergency. That is one of the things that this committee has in mind.

It also is aware of the point you brought out: and to relieve the transportation congestion in times of emergency, and of distributing the efforts of all our citizens in time of war throughout different sections of the Nation.

Now, it is rather impressive to me that all the witnesses before you spoke of Government subsidies. Of course this committee is not in favor of Government subsidies. I have spent almost a quarter of a century in Congress, and I imagine my record in voting against all kinds of subsidies is about as good as any Member in the Congress. Because I certainly believe in private enterprise and individual initiative.

But as the chairman opened this hearing, he tried to emphasize the point that we are not thinking of this problem on just an economic or fiscal basis. We are looking only at the defense and security of this Nation.

We do know that while the private-enterprise system has made America great, that there are some undertakings where the Government has to give assistance or cooperate with other countries. And the people who have been registering such protest against Government subsidies are the very people who have profited, certainly in the development of the rich oilfields in the Near East they profited by Government help. The Government did go to their assistance.

I don't particularly care to open the subject that you have mentioned. I didn't know you were going to mention it. But I am personally quite well informed of this report by a special Senate investigating committee. I think it is something for the committee to bear in mind when we start writing our own report.

Mr. Chairman, I want to say—perhaps I should say it now because I don't want to take any more time. I think this little visit of this committee out here, after hearing certain testimony in Washington and hearing the testimony here, has been most helpful and most valuable.

I want to have a little time to read over all the statements that have been made and try to chew and digest it with an open mind. I am not thinking about profits made by any company that is now existing or will exist in the future. I am thinking primarily of the defense of this Nation.

I want to congratulate these people in California in sticking closely together and in thinking of the welfare of California. It is a great State, rich in resources and rich in population. But after all, it is

just one of the 48 States of the Union. There are other sections of the country that have to be considered.

So far as I am personally concerned, I want to put the defense of the Nation paramount, above every other consideration. And whether or not it pays, I think this committee is interested chiefly and primarily as to whether or not it is needed in case of an emergency or an all-out conflict.

I think you have given us some very good meat here to chew on and brought out some significant points that we should consider in writing our report when we reach it.

I think it is the purpose of the chairman—although I would rather he would speak for himself—when we get back to Washington we want to take the very valuable information that we have gotten out here—and let me say that it has changed my thinking in some respects to know of the additional sources of supply, particularly the tidelands, and then the amount of natural gas that is being brought in here, of the new exploration and development, the increased production due to secondary recovery, all these factors.

We want to look at both sides of this question and not look at the mountain from just one angle. We want to walk around the mountain, climb to the top and roll down it, and see this whole problem in its totality, as a whole.

I think it has been well worth our trip out here to get aditional information. I am not as alarmed today as I was last week this time as to the supply out here. I still believe in the wildcatter, these little men. I am pretty strong for these independents. Because after all, they are the ones that find and discover these new sources of supply. I think they are doing a magnificent job. I hope they will continue the good work.

I am happy that the Governor sent you over here. I know that you will carry back our very best regards; a man with whom we served in Washington. He was the majority leader of the Senate. And you can tell him that while Arizona doesn't have quite as many people as California, that we recognize that you do exist; that it is a sovereign State, and that while your needs are perhaps not as great as some other people's, we may need you a great deal in case of another emergency.

I am glad for the information that your fine statement has brought us.

Mr. MERRYWEATHER. Thank you very much.

Mr. HÉBERT. Mr. Hess?

Mr. HESS. No questions.

Mr. HÉBERT. Mr. Miller.

Mr. MILLER. I would just like to say that I, too, am very happy that the gentleman has come over from Arizona at the behest of their good Governor. I want to assure my esteemed colleague, Mr. Short, that the interests of California and Arizona never get very far apart. We in the West recognize a mutuality of interest and we will continue to do so.

Like him, I am concerned with this problem from a national-defense standpoint. I, too, feel that in coming here we have learned a great deal. And I am very glad that some of the fears that we had have perhaps been lessened by what we have learned here.

But it strikes me, Mr. Chairman, that the defense of the country is one that we must look at as a whole. We were very much concerned with the deficiency of about 50,000 barrels a day on the Pacific coast, when I think we should be more concerned with the deficiency of a million barrels a day on the east coast, all or the greater portion of which must come there by tanker, vulnerable tankers and tankers that we won't have in time of war.

So I think we will be able to rest our west coast case and say that we are as prepared here to meet an emergency as any part of the country as far as our oil supply is concerned and its potential.

Mr. HÉBERT. Mr. Rivers.

Mr. RIVERS. Mr. Merryweather, what is the refining capacity of Arizona?

Mr. MERRYWEATHER. Mr. Rivers, I believe that Arizona could easily justify the existence of a refinery at the initial point of capacity of perhaps thirty to as much as forty thousand barrels a day.

Mr. RIVERS. Do you have any refineries there now?

Mr. MERRYWEATHER. We have none.

Mr. RIVERS. No refineries?

Mr. MERRYWEATHER. None whatsoever.

Mr. RIVERS. You are totally dependent——

Mr. MERRYWEATHER. On outside sources.

Mr. RIVERS. On products, pipeline and tank car, from points to the west and to the north of you, or is it the east of you?

Mr. MERRYWEATHER. That is correct, sir.

Mr. RIVERS. To the east of you?

Mr. MERRYWEATHER. East.

Mr. RIVERS. That is the El Paso area and the Los Angeles area, is that correct?

Mr. MERRYWEATHER. That is correct.

Mr. RIVERS. And you charge that the absence of a pipeline bringing adequate crude through your State is in effect keeping the price of crude beyond the reasonable price asked for both to your west and to the east; do you make that charge?

Mr. MERRYWEATHER. It certainly would appear that way.

Mr. RIVERS. And you certainly allege if a crude line were to come into your State, refineries would follow it?

Mr. MERRYWEATHER. That would certainly be a logical assumption.

Mr. RIVERS. What is the distance from your State to the Los Angeles area?

Mr. MERRYWEATHER. Approximately, I would say or guess, about 450 miles.

Mr. RIVERS. 450 miles. Are you safely behind the mountains——

Mr. SHORT. Is that from Yuma or Phoenix?

Mr. MERRYWEATHER. I would say, from Phoenix to Los Angeles I believe is approximately 450 to 500 miles.

Mr. RIVERS. Would that be the logical point for a refinery?

Mr. MERRYWEATHER. Phoenix?

Mr. RIVERS. Yes.

Mr. MERRYWEATHER. I should think the central portion of the State, somewhere in that general nature, would be the logical point.

Mr. RIVERS. In time of emergency, where would be the logical point?

Mr. MERRYWEATHER. In the central part of the State.

Mr. RIVERS. Behind the mountains?

Mr. MERRYWEATHER. Yes, sir; within the interior of the State.

Mr. RIVERS. Has your State tried to get any company or any group of companies interested in bringing crude oil to Arizona?

Mr. MERRYWEATHER. There have been some attempts made, I understand, and we are hopeful that if this pipeline were inaugurated, naturally we would have our crude oil from that means, that supply.

Mr. RIVERS. Which would serve your State the better, a crude line or a products line, additional products line?

Mr. MERRYWEATHER. I would think, Mr. Rivers, in the event that—we have a products line now that is being put in by the Southern Pacific, but I think very much desired is a crude line, in order to take care of our transportation difficulties which we are faced with now, and in addition, as we mentioned in this report, to promote the wildcatting of wells around Arizona and eventual development of oil within the State.

Mr. RIVERS. What is the extent of your defense activities in Arizona?

Mr. MERRYWEATHER. We have numerous airbases in Tucson and Phoenix and the areas surrounding them and we have, of course, Fort Huachuca, which is very busy in their electronics division, near the Mexican border, south of Tucson, and there are numerous war industries also that have moved into the State.

Mr. RIVERS. Now, you subscribe to the report which in effect alleges that this is a part and parcel of the overall Arabian crude production; that is, the allocation of the various segments of the industry to digest the crude? By that I mean this, if you don't quite understand me: Every witness has testified there could be more refining potential on the west coast. Every witness has said that.

Mr. MERRYWEATHER. Yes.

Mr. RIVERS. And every witness has said that they do have just about as much crude as they can digest, with the refining capacity at present. I believe I am safe on that.

Mr. MERRYWEATHER. That is my understanding, Mr. Rivers.

Mr. RIVERS. And you believe that that failure to construct these media to use the crude oil is done as part and parcel of the overall price of the finished product?

Mr. MERRYWEATHER. It affects the finished product and it also appears as a means of the nonbuilding of refineries in this area would justify the importation of some of your eastern oils.

Mr. RIVERS. And much of your refined product comes from the Los Angeles area?

Mr. MERRYWEATHER. That is correct. And it would appear to me if they are short on refineries in this area, why not have a refinery in Arizona where we can do it ourselves and save the transportation costs and some other costts which I am at a loss to understand, which apparently reflect themselves in the price of our gasoline in Arizona.

Mr. RIVERS. Do you think they are afraid to pass through Arizona with a crude line, afraid you might get a few drops of it? [Laughter.]

Mr. MERRYWEATHER. I am a little bit suspicious, Mr. Rivers.

Mr. RIVERS. Yes, sir.

Mr. MERRYWEATHER. That might be the case.

Mr. RIVERS. Have you in your official capacity tried to get these—I think they call themselves common carriers—interested in such a venture?

Mr. MERRYWEATHER. Many of us have been interested, Mr. Rivers, in trying to get various people to put a common carrier through for crude oil into central Arizona.

Mr. RIVERS. And have you taken this up with the Defense Department?

Mr. MERRYWEATHER. I have not personally; no, sir.

Mr. RIVERS. Has your Governor taken it up?

Mr. MERRYWEATHER. I believe that it has been brought up with him, but I am not familiar with the details.

Mr. RIVERS. So you are kind of—you didn't exactly say it, but you feel that there may be just a little bit—kind of a conspiracy to keep this price level kind of high so you might have to pay just a few more cents?

Mr. MERRYWEATHER. That would not be a hard conclusion to arrive at, I don't believe, Mr. Rivers.

Mr. RIVERS. What is your conclusion?

Mr. MERRYWEATHER. Yes, affirmatively.

Mr. RIVERS. All right. That is all, sir.

Mr. HÉBERT. Mr. Merryweather, of course, you understand that while we are very sympathetic to what the price of gasoline is in Arizona, that is really not the question we have to decide. We are approaching this subject entirely on a defense basis, and the military necessity. I am sure you understand that.

Mr. MERRYWEATHER. Yes, I do, sir.

Mr. RIVERS. Let me ask him this: Is that differential about which you speak equally applicable to the military consumers in your State as it is to the civilian consumers?

Mr. MERRYWEATHER. Yes, it is.

Mr. SHORT. Well, if the gentleman would yield there.

If you did have a pipeline bringing the crude across Arizona and had a refinery there, where you got these huge airfields in your military that consume enormous amounts of gasoline, certainly it would be cheaper for the Government as it would for your own private citizens.

Mr. MERRYWEATHER. They would benefit to a tremendous extent, there is no question about it.

Mr. RIVERS. And you charge that they have to pay the same differential, in excess of what is being paid in the California and Texas area?

Mr. MERRYWEATHER. That is my understanding, Mr. Rivers. There may be some taxes that, of course, are eliminated, but other than that, your base price is the same.

Mr. RIVERS. And that is as a result of the absence of products and/or crude lines?

Mr. MERRYWEATHER. That would be I believe a very correct assumption, Mr. Rivers.

Mr. MILLER. Mr. Chairman.

Mr. HÉBERT. Mr. Miller.

Mr. MILLER. Mr. Merryweather, what has been the extent of exploration for oil in Arizona and what is the prognosis? Does it look good?

Mr. MERRYWEATHER. I think, Mr. Miller, that there have been over 100 wells drilled in Arizona. I think of those—there are probably only 14 that were drilled intelligently, in which logs were taken and modern

methods were used. We have located gas in northeastern Arizona. Shell located a well there in the early part of this year. Humble is putting another one next to it.

Mr. MILLER. Northwest? Where is it?

Mr. MERRYWEATHER. Up in Apache County, up in the four-corners area.

Mr. MILLER. North of Grand Canyon?

Mr. MERRYWEATHER. It would be south of the Grand Canyon, in the northeast corner.

Mr. MILLER. Yes.

Mr. MERRYWEATHER. And there is also currently an exploration deal going on in northwestern Arizona, up in Mojave County, on what was once called the old Naval oil reserve, and I think the prospects there are excellent.

Mr. MILLER. For oil or gas?

Mr. MERRYWEATHER. Well, we are under the assumption we will get oil. There have been producing oil wells north of us, about 25 miles to the north, and if we can get some of Representative Short's wildcatters in there, I think we will perhaps benefit in the very near future.

Mr. RIVERS. You didn't have to put the "cat" on there. They are pretty wild people in the Ozarks. [Laughter.]

Mr. HÉBERT. Mr. Courtney, do you have any questions?

Mr. COURTNEY. One question for the record to amplify the Commission with which you are identified, or an explanation of it.

You speak of the Interstate Oil Compact Commission, of which you are the Arizona member?

Mr. MERRYWEATHER. I represent—I am the official representative of Governor McFarland, who represents the State.

Mr. COURTNEY. Who represents the State on the Commission? Now, just so the record will be complete, how many States participate and what are the States?

Mr. MERRYWEATHER. I believe, if my memory serves me correctly, Mr. Courtney, that there are 32 States participating in the Interstate Oil Compact Commission.

Mr. COURTNEY. Does it include the State of California?

Mr. MERRYWEATHER. No, it does not. I believe California was at one time a member of the Interstate Oil Compact Commission.

Mr. SIMMONDS. No, it was not.

Mr. MERRYWEATHER. It was not?

Mr. SIMMONDS. No.

Mr. MERRYWEATHER. Then it was not. Certainly it is not now.

Mr. COURTNEY. Does it include any of the States you know of in district 5, for example, Washington, Oregon——

Mr. MERRYWEATHER. Yes, Washington, Oregon, and Nevada has recently become a member, as well as Utah, Colorado, Wyoming. I am not sure whether Idaho is. Of course Texas and New Mexico are members of long standing.

Mr. COURTNEY. Texas and New Mexico are members of your——

Mr. MERRYWEATHER. Of the Interstate Oil Compact Commission.

Mr. COURTNEY. Those are the only questions I had.

Mr. HESS. I have a question.

Mr. HÉBERT. Mr. Hess.

Mr. HESS. Mr. Merryweather, I believe I understood correctly that this proposed pipeline, products line, that is being constructed by Southern Pacific will come through Arizona; will it not?

Mr. MERRYWEATHER. That is correct. I understand that is going to parallel their main line.

Mr. HESS. Won't that have a tendency, then, to reduce the price of your gasoline there and your products?

Mr. MERRYWEATHER. We are hopeful that it may have an effect in that.

Mr. HESS. What is the reason—you say from time to time there have been discussions with reference to the operation of a pipeline, a crude line, through Arizona from the fields in Texas, and also the construction of a refinery. What is the reason that those things weren't done?

Mr. MERRYWEATHER. Well, Mr. Hess, I do not know all of the reasons. I think one of them is the reason of pure economics.

Mr. HESS. Economically not feasible?

Mr. MERRYWEATHER. Yes, that seems to be it.

Mr. HESS. That is the reason?

Mr. MERRYWEATHER. That seems to be one of the reasons it hasn't been developed. I don't mean it is economically unfeasible at all. The people that started it did not have the funds to get the job done.

Mr. HESS. That is all.

Mr. HÉBERT. Do you mean to say by that answer to Mr. Hess' question that if they had the money to get the job done the pipeline could pay?

Mr. MERRYWEATHER. I believe it would pay, Mr. Hébert.

Mr. HÉBERT. Then following that through, do you think that people who invest know a good thing and they don't go into it until they know they have a good proposition?

Mr. MERRYWEATHER. We are hopeful they will see the light in the near future and I think certainly with a little—some kind of an assist, they can get the job done.

Mr. HÉBERT. Some kind of a Government assist, then?

Mr. MERRYWEATHER. I am not in the least bit familiar, Mr. Hébert, with just what assistance is contemplated in this particular pipeline, its construction.

Mr. HÉBERT. No assistance is contemplated. The only assistance available would be a guaranty of the loan to the individuals who would construct the line or the lending of the money by the Government.

Mr. MERRYWEATHER. And that would be based on its ability to use the oil as it arrives in Arizona; is that not correct?

Mr. HÉBERT. No. It would go even further than that.

Mr. MERRYWEATHER. Or California?

Mr. HÉBERT. It would go to the extent that even if here it was not an economic feasibility and the Government decided that in the interest of defense, despite its economic shortcomings, the need for the defense purposes would be paramount, the Government would then take a calculated risk, on either guaranteeing the loan for lending the money to the individuals or the group who would construct the line.

Mr. MERRYWEATHER. Well, I am certainly no authority on the subject, but it is my belief, very firm belief, that the Government would be taking very little risk in guaranteeing it, for the reason that I believe the products piped through the line would be used to capacity in very short order.

Mr. HÉBERT. Well, of course, that is what concerns the members of this committee to a great extent—the fact that if this is a justifiable economic proposition, why private capital does not build it. However, at the same time I repeat and reemphasize that the committee's concern or cognizance does not direct itself to the economic value of the line.

Mr. MERRYWEATHER. I see.

Mr. HÉBERT. But strictly to the military necessity of it.

Mr. MERRYWEATHER. That is——

Mr. HÉBERT. Any further questions?

Mr. RIVERS. Of course, the development of the oilfields in Saudi Arabia were justified by the State Department, for two reasons: They didn't want to get it in the hands—dominated by the British, United Kingdom; fall into the hands of the Russians; and also to stabilize the Government of—what is it, Ibn Saud?

Mr. HÉBERT. And of course the military consideration, too, for the supply of oil.

Mr. RIVERS. I say the military consideration. And then the Navy. There are 3 or 4 or 5 reasons. And they put a sizable chunk in that, from Saudi Arabia back into this outfit.

Mr. MILLER. I think you will agree in that case, not wanting it to fall into the hands of certain European countries, that we leave unmentioned perhaps the primary one and the dominant one: We just couldn't have afforded to let Russia get that valuable oilfield.

Mr. RIVERS. So now it is a going concern and a very valuable field.

Mr. SHORT. It cost us a lot of money, but it is worth it.

Mr. RIVERS. Worth it, yes.

Mr. SHORT. But you will have to admit that the rich prize is very much closer to a potential enemy than a pipeline from Texas to California would be, and if we are going to help Ibn Saud and a lot of other people all the way from Zamboanga to Zanzibar, I think we ought to help our own people a little bit.

Mr. HÉBERT. Of course the statement advanced by Mr. Merryweather is very persuasive, in that any individual says, "Don't let's have any Government subsidy except I get it."

Mr. SHORT. It depends on whose ox is gored.

Mr. HÉBERT. That is all.

I think the information brought out is very valuable for consideration by the committee. Thank you very much, Mr. Merryweather.

Mr. MERRYWEATHER. Thank you very much, Mr. Chairman and gentlemen.

Mr. HÉBERT. Mr. Petersen in the room?

Mr. PETERSEN. Yes.

Mr. HÉBERT. Sit down, Mr. Petersen.

Mr. PETERSEN. Thank you.

Mr. COURTNEY. Mr. Chairman, before we begin, I would like to express the appreciation of the staff to Mr. Merryweather. He was greatly discommoded when he came into town and had to prepare his statement and have it in mimeographed form, but I think, as you will see the operation of the committee today, you realize the justification and need for it. But we appreciate your cooperation and your prompt attention to it.

Mr. HÉBERT. Mr. Petersen, for the record will you please identify yourself?

STATEMENT OF T. S. PETERSON, PRESIDENT, STANDARD OIL COMPANY OF CALIFORNIA

Mr. PETERSEN. I am T. S. Petersen, the president of Standard Oil Company of California.

Mr. HÉBERT. Mr. Petersen, you are here in response to an invitation by the committee issued yesterday as a result of a statement which was attributed to you in connection with the construction of a pipeline by the Standard Oil of California to El Paso. A press release was given out yesterday, which was read into the record. I am sure you are familiar with that press release.

Mr. PETERSEN. Yes, indeed.

Mr. HÉBERT. Now, the committee has asked you to come down here, and we thank you for your appearance, in order to clarify the situation, because we have very much concern about the manner in which this whole announcement was held. As you well know, the committee's intention of conducting these hearings in connection with this pipeline or proposed pipeline was not a military secret nor a State Department secret. It was given wide publicity. We announced our intentions a long time ago.

Mr. Short had introduced a resolution in the Congress in connection with setting up a select committee for it, and then the cognizance was given to this committee. And on June 27 this committee made an announcement of its intention of holding hearings and the field in which it would explore and also announced that hearings would be held on the west coast to hear the individuals here.

During conferences in Washington with the staff and with individual members, Standard Oil of California was represented, discussed the plans for the presentation of witnesses here, and yet the committee was amazed to find that not until the press release was handed to this committee on yesterday was this committee ever informed or did it ever have any indication, by suggestion or otherwise, that Standard Oil of California was contemplating the building of this pipeline.

The committee was further rather amazed yesterday to hear testimony that the head of the Southern Pacific Pipe Line had only been informed or knew anything about this matter as of Thursday of last week, which was the day on which the committee began its hearing in Washington.

The committee was further amazed to learn that the construction of this pipeline, which amounts to quite a sum of money, apparently was just merely discussed in an offhand manner. And certainly if it had been discussed at any great length, the committee feels that it should have been informed of it, which it was not, and the committee feels further that the timing and the manner in which this release was given to coincide with the very moment that the committee was sitting here to hear this problem is something which the committee is just wondering exactly why it was handled in that manner and exactly to what extent and when did the Standard Oil Co. decide to make this announcement. And while we recognize we have absolutely no control nor do we intend to take any control over private enterprise, we think that in the broad picture and the broader aspect of military necessity in the defense of this country, that in common

courtesy this committee should have been informed as to the intent of Standard Oil of California, particularly since representatives of Standard Oil of California were in contact with the committee and with its staff.

Now, for that reason we have asked you to come down today, to give your side of the story.

Mr. RIVERS. And may I add, too, Mr. Chairman, coupled with the fact that this committee has been on very good terms with your company. We have had some very close association with your company in the operation of the Elk Hills. And we feel that the cooperation we have given your company would justify certainly some consideration of reciprocity on your part to us. That is my feeling.

Mr. PETERSEN. Well, Congressman Hébert and your associates, as long as you expressed yourself in the way you have, and the concern that you evidence, why, I am delighted that you did give me a chance to come down and tell you the developments of this particular pipeline that our company is building.

We have considered the matter of enlarging the pipeline that comes from Snyder, Tex., to El Paso now for 4 or 5 months. The reason for that is that we just have to have more capacity going through that pipeline, not only to serve ourselves but to serve other people who use the pipeline. We have studied a good many ways of doing it. We had thought that we would approach it from taking the two 8-inch lines that compose that pipeline at the present time and enlarging those to a 14-inch line; that the two 8-inch lines remain in the ground. We finally came to a conclusion here about 3 or 4 weeks ago that the more economical thing to do would be to really put in a big line in a part of that pipeline system.

So last Thursday, at our executive committee meeting, we approved an appropriation for several million dollars to lay 70 miles of 20-inch line in that particular part of the line, which was owned, incidentally, by the Standard Oil Company of Texas, which is a subsidiary of ours, and let that become the means of adding the improved volume of oil through the line to the refineries in El Paso.

Now, if we have been remiss in not keeping your committee advised of the developments of that pipeline, I am sorry, and I apologize to you for that omission.

Having arrived at the conclusion to make that enlargement and bring that pipeline that can, as it is fully completed to a 20-inch size back to the fields of Texas, bring a tremendous amount of crude oil to El Paso and at El Paso for disposal in any direction it might seem desirable, particularly in time of crisis.

Now, if we had let that pass and had made the decision to go along and build that pipeline and not informed your committee, I think we would have been extremely negligent. If we had not taken the action we did of giving publicity to it, you could well have said that we had not let you know what this company was planning at a time when you were sitting in Los Angeles considering what you felt should be done about supplies on the west coast.

If we had done that day before yesterday, I think you could have just as soundly have felt that we were doing it to embarrass you, as you were starting from Washington to come out here.

We didn't know until Thursday we were going to do this. We took no final action on that. If we had waited until you had gone,

you could very well have said, and I think with considerable resentment, that we had let your committee leave the west coast without having informed you of what our plans were. And so we made our newspaper announcement as was contained in the paper yesterday with the idea of telling everybody that we had taken that step; that we were planning on putting that larger section of line in, and it would have the possible results of doing several things: (1) being able to feed into the Southern Pacific lines in the event there was ever an emergency, or the other alternative of being able to pick up that line in some means at El Paso and bring it on west if an emergency ever justified that.

That is the development of that line.

Mr. HÉBERT. Yes, Mr. Petersen, I appreciate your position there. But let us keep in mind that no representative of your company asked to appear as a witness in connection with these hearings, when you had under consideration the building of this pipeline. At no time was a request made by Standard Oil of California to appear here. Your representatives knew as of June 27 that these hearings were to be held here and that we were coming to the west coast particularly for the convenience of the individuals on the west coast and to give them an opportunity to be heard. Yet you say this line was contemplated for 4 months. And yet——

Mr. PETERSEN. Some modification, Mr. Chairman——

Mr. HÉBERT. Well, some modification.

Mr. PETERSEN. Had to be made in that line.

Mr. HÉBERT. And yet to tie in with the emergency and the military necessity, in which this committee is primarily interested, the Southern Pacific Pipe Line people were only informed as of last Thursday. They were called on the telephone, I think the testimony will show, to make inquiry of the capacity of its line. Now, that was the only time, according to the testimony before us—and we didn't know anything beyond that, but what has been told us—that the Southern Pacific people were contacted. Though now you say the line was under consideration for 4 months.

Mr. PETERSEN. I am talking about our line, from El Paso on east.

Mr. HÉBERT. I am talking about your line.

Mr. PETERSEN. The call to the Southern Pacific, Mr. Chairman, was made in the interest of knowing that that line could be reversed in the event it was desirable at any time to put crude as crude through that line and pump that crude to Los Angeles. That was the telephone incident.

Mr. HÉBERT. That is correct. And you tied in your statement—you know the statement. You gave it out. And you tied in your statement with the Southern Pacific Pipe Line for the emergency. And the only time, to the knowledge of the Southern Pacific people, that you were interested in the capacity of their line was as of last Thursday, the day that this committee sat in Washington——

Mr. PETERSEN. No.

Mr. HÉBERT. And the only time, the only statement given out of tying it in with the area which this committee was exploring, namely, the military necessity, was the decision to release this information to the public simultaneously with the sitting of this committee in Los Angeles, and except for the alertness and the interest of an individual

newspaper reporter, this committee to this minute would not have known of that announcement.

Mr. PETERSEN. Well, we certainly intended that you know about it. And that was the purpose, not only of having this committee but of having everybody in the oil industry understand that we were taking that action. It was done—something that was routine in our operation.

Now, when you indicate that we asked the Southern Pacific the capacity of the line, we have been very familiar with the capacity of that line for the last 4 or 5 months. We have to be, because we expect to use that line and expect to have that line perform quite a service as it stretches across the States of New Mexico and Arizona that was just referred to.

Mr. HÉBERT. Mr. McGanney, the vice president of the line, testified here yesterday he never heard of this until last Thursday, and yet you say you were fully cognizant of——

Mr. PETERSEN. I think, Mr. Chairman, that Mr. McGanney was talking about the capacity of our line from El Paso on east, not his line.

Mr. HÉBERT. He was talking about your line—that he had never heard of it.

Mr. PETERSEN. He had never heard of it; that is right.

Mr. HÉBERT. And then—and you were fully cognizant of the capacity of the Southern Pacific line. Why was the call put in to Mr. McGanney then to find out what the capacity was, if you knew it already?

Mr. PETERSEN. It wasn't put in for the purpose of finding out what the capacity was because we had been, as I say, close to that situation, because of the products we expect to put in that line, for months. The call was for the purpose of finding out if that line could be reversed from Phoenix to Los Angeles and the flowing from El Paso to Los Angeles.

Mr. HÉBERT. Well, you didn't know that for 4 months when you were considering this line?

Mr. PETERSEN. No. It had been spoken of, but I didn't want to make mention in the newspaper of that point without knowing that they were going to confirm it, which, of course, they did.

Mr. HÉBERT. Well, when was the consideration for a national emergency taken into consideration for the construction of this line?

Mr. PETERSEN. Well, that comes in stages, Mr. Chairman. The first increment that is going to happen to that line that we are now enlarging will happen immediately, and that will reach to the point of having this first 80 miles of 20-inch line laid. That is 80 miles of some 349 miles of line back as far as Snyder, Tex.

The next increment will come as soon as the requirements justify the additional 20-inch line, and so on, until it is finally compete, and at that time the line will be in the position of hauling or carrying about 225,000 barrels of crude oil a day.

Mr. HÉBERT. Well, of course, as Mr. Rivers has also indicated to you in his remarks of a few minutes ago, I think that this committee and its predecessor, the old Naval Affairs Committee, of which both Mr. Rivers and Mr. Hess and myself were members, have always had very fine relations with your company, and I think we have been very considerate in the operation of Elk Hills. We were on the old committee that initiated that.

Mr. PETERSEN. Yes, sir.

Mr. HÉBERT. So I don't think we can be criticized very much for feeling a little aback, under the present situation, when we are investigating something of such great importance to the defense of this country and then are told that we must rely on an obscure, in this particular case, newspaper article, which I haven't seen in the newspaper yet. It is like posting the names on the courthouse building and saying, "If you are not here by a certain date, we are going to dispossess you, and if you don't read the bulletin on the courthouse wall, you are just out of luck."

Very frankly, speaking for myself, I think the committee has been placed in a very awkward and embarrassing position. Otherwise, we would not have invited you to come down to explain it. And particularly in view of the past relations of this committee and its predecessor with your company.

Mr. PETERSEN. Well, I am certainly sorry.

Mr. HÉBERT. Of course we can't belabor the question, and we don't intend to. And whatever you do as the Standard Oil of California is your business. It is none of our business. It is your business. However, when we have something, of which you were fully cognizant, your company, who had representatives in Washington, who are fully cognizant of this situation, who knew for weeks we were going to have this investigation, who knew for weeks the area we were going to explore, and yet we are compelled to depend upon a newspaper release to find out what is going on, I don't think it is playing the game fair with us, Mr. Petersen.

Mr. PETERSEN. I am certainly sorry that you feel that way. As I say, this action came up Thursday afternoon, and that is the only time that anyone in the company would have been authorized to have stated that we were actually going to do anything to that line.

Mr. HÉBERT. Why didn't you announce it Thursday afternoon?

Mr. PETERSEN. Just the matter of timing. Thursday afternoon—we could have announced it Thursday afternoon. Your committee was leaving Washington Thursday afternoon——

Mr. COURTNEY. Excuse me, Mr. Chairman. The committee opened its sessions on Thursday.

Mr. HÉBERT. Opened its sessions on Thursday morning, at 10 o'clock.

Mr. PETERSEN. If we had made the announcement at that time—just a matter of timing, whether we did it on Thursday or whether we did it on Friday. As a matter of fact, we had some little trouble with the announcement itself. And the reason we didn't announce it Thursday night was because of trying to get the wording down to a point that it was satisfactory to our group in our family.

Mr. HÉBERT. The release that you gave is a "Hold release for Monday afternoon papers." It is a hold release.

Mr. PETERSEN. That is right.

Mr. HÉBERT. So it was prepared—it was decided on Thursday and it was a hold release until we got to California.

Mr. PETERSEN. I beg your pardon. It was decided on Friday and——

Mr. HÉBERT. Well, on Friday, then.

Mr. PETERSEN. On Friday, and on Friday afternoon was released to the papers for release on Monday as is indicated on that release.

Mr. HÉBERT. Not only on Monday, but the afternoon newspaper of Monday.

Mr. PETERSEN. There are no morning newspapers that can be reached, except you make a release on Sunday afternoon in San Francisco.

Mr. HÉBERT. But it is a p. m. release, a hold p. m. release.

Mr. RIVERS. Let me ask him.

Mr. HÉBERT. Mr. Rivers.

Mr. RIVERS. Mr. Petersen, there is no use to sit here and argue with you about whether or not you offended us intentionally or inadvertently. It is beside the point. The only thing I have to say: If you thought of us any time Thursday or today, you should have thought of us before. Because the defense of this country is everybody's business. You are as much in that business as we are. By law we are charged with providing for the military on the House side of the Capitol. That is our responsibility. We have access to the most secret information of the Defense Department: what the plan is in event of an emergency; what the first year, the second year, the third year and the fourth year is, and what the requirements may be. We have that.

So we feel, in the directive with which we are charged by our chairman, Mr. Vinson, and the Congress, on the House side particularly, that we are entitled to the complete cooperation of all people—not only the Standard Oil Company of California. And in a very short time we will go into discussions with your company about Elk Hills, I think, if my memory serves me right. I believe it is pretty soon.

Mr. PETERSEN. I certainly hope so. [Laughter.]

Mr. RIVERS. We don't keep you in the dark.

So we have every right to be offended. And no explanation will be satisfactory to me about this. But that is not the point. So there is no use to talk about that.

I notice here that you said:

> In the event of an emergency it would be relatively a simple matter for the Southern lines—

and so forth—

> to change over the transportation of crude oil all the way to Los Angeles. The outstanding feature of this arrangement would be its flexibility to meet sudden emergencies.

It indicates beyond the peradventure of a doubt that the emergency was part and parcel of your consideration and deliberations in your organization.

Mr. PETERSEN. No question about that. We have had that very much in mind.

Mr. RIVERS. Yes, sir. So we have every reason to know what your company can do—any company—should these refineries get bombed. And we have testimony on that.

My own reflection is: if you get damaged in these refineries on the west coast, where will they be? It will be from nuclear weapons. The Russians aren't going to make this long journey on a one-way trip with anything but a first class outfit. That is all they are going to care, because they are not going to get back.

Mr. PETERSEN. I don't quarrel a bit with you on that.

Mr. RIVERS. So your refineries would suffer extensive damage, and all refineries. So transportation to this excellent area is highly essential, both for the military and for the civilians, what is left of them, when a nuclear bomb hits.

Mr. HÉBERT. Mr. Hess?

Mr. HESS. No questions.

Mr. HÉBERT. Mr. Miller?

Mr. MILLER. No questions.

Mr. HÉBERT. Mr. Short?

Mr. SHORT. The thing that is very little short of shocking to me is that practically all the witnesses that we have heard here in Los Angeles testified that they have an adequate supply of oil here on the west coast and in California and that a line was not needed either in peace or war. And I think it was Mr. Minckler, the first witness we had yesterday, who said that if the pipeline were constructed from west Texas to California, it wouldn't be economically justified and that it would be useless, useless in time of war.

But now it seems that some of you perhaps have changed your mind or position and you recognize that in time of emergency we would need a pipeline from El Paso to Los Angeles in order to step up transportation at a lower cost and to give us an adequate supply in case of war.

Only yesterday or last week you were saying, "No; we don't need it; we don't need it at all."

Yet you are going to build a line to El Paso that can distribute this oil through the link constructed by the Southern Pacific to this area. So after all, perhaps there is a need for a pipeline. It is hard to understand people saying one day that it is not needed, you have an adequate supply, and then the next day, "Well, I am not so sure about that. Perhaps we should increase our capacity to deliver additional petroleum to El Paso."

I think Texas got enough oil down there to satisfy their own needs. The reason they are bringing it to El Paso is to ship it from there through Tucson and Phoenix and on out to the Los Angeles area.

Mr. PETERSEN. I think the point that Congressman Rivers made is the only place where we would need additional oil here, Congressman Short. Because if you had an atomic weapon that was let loose one one of the dense oilfields here, such as our Wilmington field, it could be that there would be some very severe damage. And that is the type of emergency that we visualized when we commented on the fact it may be. Certainly there is no need for it now. We are in balance here.

Mr. SHORT. But you reached that conclusion only last Thursday.

Mr. PETERSEN. We always had that conclusion.

Mr. SHORT. You couldn't make up your mind until last Thursday. Until you knew this committee was going to hold this hearing and until we started talking about the building of a pipeline then you decided, last Thursday, that maybe we do need it.

Mr. PETERSEN. I don't think you are stating that right. We decided last Thursday that we would add to our pipeline. And adding to it, we would add to it in such volume that it could serve several purposes. One, it could serve the purpose of increased demand from El Paso and Albuquerque and that area. Another one, it would have such capacity that it could go even beyond that. We made up our mind Thursday but we studied that question, Congressman, for a long time.

Mr. HÉBERT. Do you have any questions, Mr. Courtney?

Mr. COURTNEY. Do you yield?

Mr. SHORT. Yes.

Mr. COURTNEY. The question, Mr. Petersen: The figures and the charts and the graphs and all the data that has been presented by the Western Oil & Gas Association and its numerous members and which has occupied our attention yesterday and this morning, are all based on the calculations which do not include any additions or any of oil that could be put through the pipe that you are just talking about, crude oil, and which you announced on yesterday?

How much of a difference would it make in these calculations, if you know them—and I assume you are a member of the association, aren't you?

Mr. PETERSEN. No; I am not a member now. Our company is a member.

Mr. COURTNEY. Your company is a member. How much of a difference would it make in the total amount of oil deliverable in the Los Angeles area for district 5 to have the additional capacity of this 20-inch line?

Mr. PETERSEN. Well, it would make the difference, at the present time, depending on what was done at the other end of the line, I mean at the El Paso end of the line, as between 55,000 and 225,000 barrels of oil.

Mr. COURTNEY. Well, then, these figures that we have here are two hundred and twenty-some thousand barrels short.

Mr. PETERSEN. No; those figures——

Mr. COURTNEY. Is that correct?

Mr. PETERSEN. Those figures you have are absolutely accurate, I assure you. And this potential amount of oil that could come or could be brought through that pipeline ultimately is something that is completely apart from that. It will never be brought, unless there was some radical change on the Pacific coast.

Mr. COURTNEY. Well, let me restate it. There is testimony here, by Mr. Fox, that the maximum from known sources, exclusive of the line that you have now spoken of, a deliverable or potential of 565,000 barrels for emergency purposes. Now, adding to the capacity in the sources that Mr. Fox and all the people in Western Gas & Oil Association have testified, how much would you add to that potential by reason of the developments of Thursday and Monday, the purpose of your company to build a 20-inch line?

Mr. PETERSEN. It wouldn't add at all to those figures, unless something was done with that oil that ultimately would be available at El Paso, which as I say—if that could be put into a pipeline and brought to Los Angeles, that would be the difference between 55,000 and 225,000.

Mr. COURTNEY. At El Paso.

Mr. PETERSEN. Yes. But that doesn't apply at all to these figures that have been given you. Those we agree with completely.

Mr. COURTNEY. You agree with the figures as they are presented?

Mr. PETERSEN. Yes, indeed.

Mr. COURTNEY. You realize, of course, it might considerably upset the validity of these figures?

Mr. PETERSEN. Well——

Mr. COURTNEY. If that calculation had not been made?

Mr. PETERSEN. The point I would like to leave clear with you gentlemen is that this line is now coming from west Texas to El Paso. There is a line there. It is a limited line.

Mr. COURTNEY. Two 8-inch pipe, is that right?

Mr. PETERSEN. That is right. And it is being enlarged to a point where seventy-odd miles are being made into 20-inch pipe, and by successive stages we will increase that 20-inch pipe. At that time the line could carry 225,000 barrels of crude oil.

Mr. RIVERS. Now, may I ask this question, Mr. Petersen: When that line will have been completed, is there sufficient refining capacity in the El Paso area to utilize it at full capacity?

Mr. PETERSEN. No.

Mr. RIVERS. There is not?

Mr. PETERSEN. No.

Mr. SHORT. Well, what assurance do we have, other than your word, that you are actually going to build this line?

Mr. PETERSEN. I can take you over there Monday morning. I will get you into the job. [Laughter.] We will start together.

Mr. SHORT. But you are absolutely frank and forthright and serious when you tell us you are going to build this 20-inch line?

Mr. PETERSEN. If you would like to see it, I will take you there Monday morning and show you getting under way on the line.

Mr. SHORT. If you say you are going to build it, I believe you will build it.

Mr. PETERSEN. Thank you.

Mr. RIVERS. Are you going to increase your refining capacity in the El Paso area?

Mr. PETERSEN. Yes, but not at the present time to that amount.

Mr. RIVERS. Is there any disposition on your part to deliver additional products into the Arizona area?

Mr. PETERSEN. Yes. We have a very definite interest in delivering larger quantities of petroleum products into Arizona.

Mr. RIVERS. If the military were to come to you and say, "We think it would be wise to construct a refinery behind the mountains in Arizona, 400 miles from the coast," would you take that under serious consideration?

Mr. PETERSEN. It would be much more economical to increase our refinery capacity at El Paso and use the product pipeline into Arizona.

Mr. RIVERS. Yes.

Mr. PETERSEN. Now, when that pipeline is finished, and this gentlemen evidenced an interest in price, we will reduce—we have already made a public statement in Phoenix—price of gasoline and diesel oil, 1½ cents a gallon. The price difference between Los Angeles and Phoenix is 3.1 cents a gallon now on gasoline. So we will just cut that in two. But it will be more economical for the people of Arizona, and for ourselves, for us to enlarge that refinery at El Paso and serve that area just as effectively.

Mr. RIVERS. Yes. Because you will have the terminus of your crude oil and your present pumping facilities over your products line?

Mr. PETERSEN. That is right.

Mr. RIVERS. Will it necessitate additional products transportation?

Mr. PETERSEN. The line?

Mr. RIVERS. Yes.

Mr. PETERSEN. I am sure the Southern Pacific will keep pace there with that very easily, because all they have to do is put another pumping station or do a little looping and they have that capacity added.

Mr. RIVERS. I see. So, therefore, this has a direct bearing on the definite economy of Arizona, plus the military potential; is that your statement?

Mr. PETESEN. Well, this product pipeline plus the added refining capacity at El Paso.

Mr. RIVERS. I am talking about that.

Mr. PETERSEN. Has a tremendous effect on that area.

Mr. RIVERS. An additional refining capacity is definitely under consideration and prospect?

Mr. PETERSEN. Yes; by not the substantial amounts that would take that up to 125,000 barrels, Congressman Rivers. I don't want to mislead you on that. We are increasing that capacity now about 10,000 barrels a day and that is sufficient to take care of the area.

Mr. RIVERS. If some other outfit were to build a large refinery in the El Paso area, could they be assured of crude oil from your line?

Mr. PETERSEN. The line is a common carrier and it would be assured of the capacity in that line. Texas and another small refinery are using the line now.

Mr. RIVERS. That is a common carrier?

Mr. PETERSEN. Yes, sir.

Mr. RIVERS. I am glad to hear you say that.

Mr. PETERSEN. Your point about if the military came to us and asked us for additional quantities: They have done that in Hawaii. We are now starting to build a refinery in the Hawaiian Islands.

Mr. RIVERS. Yes, sir.

Mr. PETERSEN. We have gone to the military and despite the implication that we are not trying to be a very good citizen, I assure you we are.

Mr. RIVERS. Well, we are not so bad ourselves. And I will tell you this [laughter], we have had a lot of dealings with your people. That is why we feel a little bit offended that of all the committees in the Congress who have had such fine relations with you, you would fail to take our chief counsel in your confidence in your discussion. You can trust us with anything, including your bank account. [Laughter.]

Mr. PETERSEN. I would rather give you my bank account than to hear you say you don't think we have been very nice to you. We intend to.

Mr. RIVERS. We got you here so we could tell it to your face and you wouldn't have to read it in the newspapers. [Laughter.]

Mr. HÉBERT. Any other questions?

(No response.)

Mr. PETERSEN. I appreciate seeing you and thank you for your kindness.

Mr. HÉBERT. All right.

Now, members of the committee, this will close the hearings in Los Angeles. The committee will return to Washington and we will have continued hearings there. And we intend to hear from Admiral Radford, the Chairman of the Joint Chiefs of Staff, and any other interested individuals or companies before the recess of the Congress, so we can close out the record and make our recommendations.

In closing, I want to thank the city of Los Angeles for its courtesy here. Of course, our old colleague, Norris Poulson, is mayor here and is doing a magnificent job. And I want to thank all interested parties for the fine arrangements they made in the presentation of their case. We do not condemn nor blame anybody for presenting their side, but we do commend them for the manner in which they conducted the case and presented their side. It is up to us to make a decision, which we will do after we have all the facts in.

Mr. COURTNEY. Mr. Chairman, there will be a great many people—the press and otherwise—interested in the time of the forthcoming hearing. I have, in consultation with the chairman and considering the obligations of the members, and commitments to other sources and other duties, the committee will resume its deliberations on this subject during the week of July 25, and it is not possible at this time, because of legislative commitments, to state whether it will be precisely on the 25th, but it undoubtedly will be either the 25th or 26th of July as we can now forecast it.

Mr. HÉBERT. The committee stands in recess subject to call of the Chair.

(Whereupon, at 3:40 p. m., the committee adjourned, subject to call of the Chair.)

SOURCES OF SUPPLY OF OIL AND OTHER PETROLEUM PRODUCTS FOR THE WEST COAST OF THE UNITED STATES FOR MILITARY AND OTHER REQUIREMENTS

TUESDAY, JULY 26, 1955

HOUSE OF REPRESENTATIVES,
COMMITTEE ON ARMED SERVICES,
SUBCOMMITTEE FOR SPECIAL INVESTIGATIONS,
Washington, D. C.

The subcommittee met at 10 a. m., with Hon. F. Edward Hébert, chairman, presiding, and the following members present: Messrs. Fisher, Hess, Rivers, Gavin, Miller, Bates, and Short.

Mr. HÉBERT. The committee will come to order.

Mr. Courtney.

Mr. COURTNEY. Mr. Chairman, at the conclusion of our meeting in Los Angeles, the Western Gas & Oil Association and the numerous witnesses who were there had an opportunity of reviewing their testimony. There have been certain corrections made of typographical and other errors which are inherent in the process of this kind. And since that time there have been some data assembled by Mr. Kirk on behalf of the Western Gas & Oil Association, which appear to be pertinent and informative to the issues before the subcommittee.

Mr. Kirk is here this morning, and I would ask, Mr. Chairman, that he refer to the data which he has and to the corrections in the record which he desires to make.

So if you will proceed in your own way, Mr. Kirk. Your name——

STATEMENT OF WILLIAM F. KIRK, MANAGER OF THE ECONOMICS DEPARTMENT, GENERAL PETROLEUM CORP., REPRESENTING WESTERN OIL & GAS ASSOCIATION

Mr. KIRK. My name is William F. Kirk, manager of the economics department, General Petroleum Corp., and here representing the Western Oil & Gas Association.

We have about four items here that we thought pertinent and would be of interest to the committee. It is factual information, to settle some quesions that may have been raised in the minds of the committee at the time of the hearings.

The first one is a report by the Bureau of Mines, which is the latest official information on the refinery capacity in district V as of January 1, 1954. It shows in barrels per day the capacity, the amount of operating, and the amount shut down.

Mr. COURTNEY. Would you like to introduce that as a part of your statement?

Mr. KIRK. Well, I just thought we could put it in for the record as an exhibit.

Mr. COURTNEY. Now, the contents of that document are taken from official sources? This is an official document?

Mr. KIRK. Yes, sir.

Mr. COURTNEY. Mr. Chairman, I think that should be made a part of the record.

Mr. HÉBERT. Without objection, that will be made a part of the record.

(The information follows:)

REFINERIES, CRACKING PLANTS, NATURAL GASOLINE PLANTS, AND CYCLE PLANTS IN DISTRICT 5, JANUARY 1, 1954

Edward T. Knudsen, petroleum statistics, 630 Sansome Street, room 1502, San Francisco, Calif.

Harold J. Barton, Petroleum and Natural Gas Economics Coordinator, Washington, D. C.

CRUDE THROUGHPUT CAPACITY

According to data submitted to the San Francisco office of the United States Bureau of Mines (Petroleum Statistics) no new refineries were constructed in district 5 during 1953. Three refineries, the General Petroleum Corp. plant in Vernon, the Phillips Petroleum Co. plant in Spokane, Wash., and the Westoil Terminals Co. plant in Wilmington were deleted, reducing the number of refineries in district 5 from 54 to 51 (including the Calstate Refining Co. plant in Long Beach which has only cracking facilities),

Increases in the capacities of several refineries more than compensated the deletion of these three refineries and the retirement of units at other refineries, resulting in a net increase in district 5 crude throughput capacity of 16,600 barrels daily. The capacity of units in operation as of January 1, 1954, was 1,198,220 barrels daily and the capacity of shutdown units was 44,680 barrels daily.

The General Petroleum Corp. reported construction of a new refinery in Ferndale, Wash., scheduled to be on stream in December 1954. The Shell Oil Co. reported a plant in Anacortes, Wash., anticipated to be in operation the last half of 1955, the Richfield Oil Corp. reported expansion of their Watson refinery and the General Petroleum Corp., Standard Oil Co. of California, Calstate Refining Co., and the Caminol Co. were constructing additional cracking facilities. This new construction will add 100,000 barrels daily to crude throughput capacity and 58,400 barrels daily to cracked gasoline output capacity in district 5.

CRACKED GASOLINE OUTPUT CAPACITY

District 5 cracking-plant capacity changed little in 1953, the capacity of 234,535 barrels daily (cracked gasoline output) as of January 1, 1954, exceeding the year-earlier capacity only 1,650 barrels daily. These cracking plants were all reported to be in operation, except one small (400 barrels daily) thermal-cracking unit. Substantial increases are anticipated during 1954 as explained in the preceding paragraph.

NATURAL GASOLINE AND CYCLE PLANTS

Seventy-four natural gasoline and cycle plants are listed in district 5 as of January 1, 1954, two less than a year previous. The fractionating plant of the General Petroleum Corp., although included in the list of plants, is no longer included in the district 5 totals, which now include only primary capacity. The other plant deleted is one of the plants of the Cowan Oil & Refining Co. at Rosecrans which was listed as shut down last year.

The Texas Co. started operation of a new plant in Castaic in May 1954.

Petroleum refineries and cracking plants

[Barrels daily]

	Crude throughput capacity	Cracked gasoline output capacity
Capacity, Jan. 1, 1953	1,226,300	232,885
Capacity, added in 1953	83,000	3,605
Capacity, retired in 1953	66,400	1,955
Capacity, Jan. 1, 1954	1,242,900	234,535
Capacity in service, Jan. 1, 1954	1,198,220	234,135
Capacity—idle, Jan. 1, 1954	44,680	400
Capacity under construction to be completed during 1954	100,000	58,400
(*a*) For replacement		
(*b*) Additional capacity	100,000	58,400

Natural gasoline and cycle plants

	Number of plants	Natural gasoline and cycle condensate	Liquefied gases			
			Propane	Normal butane	Butane-propane mixture	Isobutane
Operating	73	75,460	20,953	6,264	5,932	3,261
Shut down	1	476				
Total	74	75,936	20,953	6,264	5,932	3,261

Crude oil capacity

[Barrels daily crude throughput capacity]

Company	Location	Type of plant	Jan. 1, 1953	Added in 1953	Retired in 1953	Jan. 1, 1954	Operating	Shut-down
American Bitumuls & Asphalt Co	Portland, Oreg	Asphalt	6,500			6,500	6,500	
Aromalene, Inc	Long Beach	Skim	1,800			1,800		[1] 1,800
Bankline Oil Co	Bakersfield	S–C	8,000			8,000	8,000	
Do	Maricopa	Skim	5,000			5,000		5,000
The Caminol Co	Manford	S–C	5,000			5,000	4,200	800
Century Oil Co	Long Beach	Skim	5,000			5,000	2,470	2,530
Douglas Oil Co. of California	Bakersfield	S–C	8,500	1,000		9,500	9,500	
Do	Paramount	do	5,000	500		5,500	5,500	
Do	Santa Maria	do		700		4,000	2,000	2,000
Edgington Oil Refineries, Inc	Long Beach	Asphalt	3,500			3,500	3,500	
Edgington-Oxnard Asphalt Co	Oxnard	do	1,500			1,500	1,500	
Envoy Petroleum Co	Long Beach	S–A	3,000			3,000	3,000	
Eureka Refining Co	do	Skim	4,000			4,000	4,000	
Five C Refining Co	Santa Maria	do	3,300	(2)	(2)	(2)		
Fletcher Oil Co	Wilmington	S–C	5,000			5,000	5,000	
General Petroleum Corp	Torrance	do	125,000			125,000	125,000	
Do	Vernon	S–A	4,000		4,000			
Golden Bear Oil Co	Bakersfield	S–L–A	3,000			3,000	2,800	200
Hancock Oil Co	Long Beach	S–C	12,000			12,000	12,000	
Harbor Refining Co	do	Skim	3,000			3,000		[1] 3,000
MacMillan Petroleum Corp	do	do	7,000			7,000	7,000	
McCallen Refining Co	Huntington Beach	do	5,000			5,000	5,000	
Mohawk Petroleum Corp	Bakersfield	S–C	11,000			11,000	11,000	
Newhall Refining Co	Newhall	Skim	2,200	800		3,000	3,000	
Olympic Refining Co	Long Beach	do	5,000			5,000		[1] 5,000
Oxnard Oil & Refining Co	Oxnard	Asph	2,500		500	2,000	2,000	
Pabco Products, Inc	Emeryville	do	2,500			2,500	2,500	
Palomar Oil & Refining Corp	Bakersfield	S–L–A	1,300			1,300	750	550
Phillips Petroleum Co	Spokane, Wash	S–C–A	5,000		5,000			
Richfield Oil Corp	Watson	Complete	115,000			115,000	115,000	
Rothschild Oil Co	Sante Fe Springs	S–C	8,000		500	7,500	7,500	
Do	do	Skim	6,000			6,000		[1] 6,000
Seaside Oil Co	Ventura	do	4,500			4,500	4,500	
Shell Oil Co	Martinez	Complete	55,000			55,000	55,000	
Do	Wilmington	S–C	64,000	55,000	40,000	79,000	79,000	
Socal Oil & Refining Co	Huntington Beach	do	1,800			1,800	1,800	
Standard Oil Company of California	El Segundo	Complete	125,000		5,000	120,000	120,000	
Do	Richmond	do	150,000	15,000		165,000	165,000	
Do	Seguro (Bakersfield)	S–C–A	20,000			20,000	20,000	
Sunland Refining Corp	Bakersfield	S–C	8,000			8,000	5,500	2,500
Sunray Oil Corp	Santa Maria	do	4,500			4,500	4,500	
Sunset Oil Co	Torrance	do	10,000		1,400	8,600	4,300	4,300
Superior Asphalt Co	Oxnard	Asph	1,000			1,000	1,000	
The Texas Co	Wilmington	S–C	60,000			60,000	60,000	
Tide Water Associated Oil Co	Avon	Complete	85,000	10,000		95,000	95,000	

Sunset Oil Co.	Torrance	Asph.	1,000			1,000	1,000	
Superior Asphalt Co.	Oxnard	Asph.	1,000			1,000	1,000	
The Texas Co.	Wilmington	S–C	60,000			60,000	60,000	
Tide Water Associated Oil Co.	Avon	Complete	85,000	10,000		95,000	95,000	
Do.	Watson	S–C	14,000			14,000	14,000	
Triangle Oil & Refining Co.	Venice	Skim.	2,500			2,500	2,500	
Union Oil Company of California	Bakersfield	S–A	8,100			8,100	8,100	
Do.	Oleum	Complete	82,800			82,800	82,800	
Do.	Wilmington	S–C–A	110,000			110,000	99,000	11,000
Do.	Edmonds, Wash.	Asph.	4,000			4,000	4,000	
Western Asphalt & Refining Co.	Santa Maria	S–A	1,500			1,500	1,500	
Westoil Terminals Co.	Wilmington	Skim.	10,000		10,000			
Wilshire Oil Co., Inc.	Norwalk	S–C	22,000			22,000	22,000	
Total			1,226,300	83,000	66,400	1,242,900	1,198,220	44,680

[1] Inoperable.
[2] Now Douglas Oil Company of California.

NOTES

Types: The following symbols are used to designate the several types of refineries:

Skimming	Skim.	Skimming, lube, and asphalt	S–L–A.
Skimming and cracking	S–C.	Skimming, cracking, and asphalt	S–C–A.
Complete	Complete.	Lube	Lube.
Skimming and lube	S–L.	Asphalt	Asph.
Skimming and asphalt	S–A.		

The crude-oil capacity of a refinery represents the maximum daily average crude throughout of the plant in complete operation, with allowance for necessary shutdown time for routine maintenance, repairs, etc. It approximates the maximum daily average crude runs to stills that can be maintained for an extended period.

These cracking plants are located at the straight-run refineries listed on page — with the exception of the Calstate Refining Co.

Cracking capacity

[Barrels daily gasoline output capacity]

Company	Location	Type of plant	Jan. 1, 1953	Added in 1953	Retired in 1953	Jan. 1, 1954	Operating	Shut-down
Bankline Oil Co	Bakersfield	Thermal	960	15		975	975	
Calstate Refining Co	Long Beach	do	550	50		600	600	
The Caminol Co	Hanford	Re-forming	170		20	150	150	
Do	do	Thermal	410		10	400	400	
Douglas Oil Company of California	Bakersfield	do	1,500			1,500	1,500	
Fletcher Oil Co	Wilmington	do	2,500			2,500	2,500	
General Petroleum Corp	Torrance	do	10,200		900	9,300	9,300	
Do	do	Catalytic	9,500	300		9,800	9,800	
Hancock Oil Co	Long Beach	Thermal	1,800			1,800	1,800	
Mohawk Petroleum Corp	Bakersfield	do	1,300			1,300	1,300	
Phillips Petroleum Co	Spokane	do	1,000		1,000			
Richfield Oil Corp	Watson	do	15,000			15,000	15,000	
Do	do	Catalytic	8,000			8,000	8,000	
Rothschild Oil Co	Santa Fe Springs	Re-forming		900		900	900	
Do	do	Thermal	1,525		25	1,500	1,500	
Do	do	Catalytic		130		130	130	
Shell Oil Co	Martinez	Thermal	1,300	900		10,200	10,200	
Do	Wilmington	do	10,400			10,400	10,400	
Do	do	Catalytic	11,000			11,000	11,000	
Socal Oil & Refining Co	Huntington Beach	do	500			500	500	
Standard Oil Company of California	El Segundo	Re-forming	5,900			5,900	5,900	
Do	El Segundo	Thermal	17,500			17,500	17,500	
Do	do	Catalytic	9,200			9,200	9,200	
Do	Richmond	Thermal	15,200			15,200	15,200	
Do	do	Catalytic	21,400			21,400	21,400	
Do	Seguro (Bakersfield)	Thermal	2,800			2,800	2,800	
Sunland Refining Corp	Bakersfield	do		450		450	450	
Sunray Oil Corp	Santa Maria	do	270			270	270	
Sunset Oil Co	Torrance	do		860		860	860	
The Texas Co	Wilmington	do	4,000			4,000	4,000	
Do	do	Catalytic	7,000			7,000	7,000	
Tide Water Associated Oil Co	Avon	Thermal	7,200			7,200	7,200	
Do	do	Catalytic	11,000			11,000	11,000	
Do	Watson	Thermal	400			400		400
Union Oil Co	Oleum	do	5,200			5,200	5,200	
Do	Wilmington	Reforming	5,700			5,700	5,700	
Do	do	Thermal	7,500			7,500	7,500	
Do	do	Catalytic	20,000			20,000	20,000	
Wilshire Oil Co., Inc	Norwalk	Thermal	4,500			4,500	4,500	
Do	do	Catalytic	2,500			2,500		2,500

Wilshire Oil Co., Inc.	Norwalk	Thermal	4,500			4,500	4,500	
Do	do	Catalytic	2,500			2,500	2,500	
Summary by types of cracking plants:								
Re-forming			11,770	900	20	12,650	12,650	
Thermal			121,515	2,275	1,935	121,855	121,455	400
Catalytic			99,600	430		100,030	100,030	
Total			232,885	3,605	1,955	234,535	234,135	400

NOTE.—Cracked gasoline capacity represents the amount of gasoline that can be produced on a daily average basis under maximum sustained throughout of charging stocks of the types in current use.

65409—52——11

Natural gasoline and cycle plants

	Location		Daily capacity (barrels)				
				Liquefied gases			
	Field	Nearest town	Natural gasoline	Propane	Normal butane	Butane-propane mixture	Isobutane
Bankline Oil Co	Midway-Sunset	Maricopa	365	35			
Do	Santa Fe Springs	Santa Fe Springs	365	35			
Belridge Oil Co	North Belridge	McKittrick	1,400	500	100		100
Brea Canon Oil Co	Brea Olinda	Brea	357				
Coline Gasoline Corp	Rincon-Padre	Ventura	370	570	260		
Continental Oil Co	San Miguelito	do	2,000				
Cowan Oil & Refining Co	Rosecrans	Los Angeles	240				
Do	do	do	(1)				
Fullerton Oil Co	Huntington Beach	Huntington Beach	1,000				
General Petroleum Corp	Athens	Los Angeles [2]	4,762	953	476		476
Do	Burrel	Burrel	476	429	524		
Do	Brea Olinda (Tonney)	Brea [3]	476				
Do	Santa Fe Springs	Santa Fe Springs	1,190				
Do	Ventura Avenue	Vent ura	952				
Do	Wilmington	Wilmington	1,786				
Honolulu Oil Corp	Cymric	McKittrick (Taft)	465			735	
Do	Midway-B. V. Hills	Taft	545	155			
Inglewood Gasoline Co	Potero	Inglewood	125				
Lomita Gasoline Co	Long Beach	Long Beach	2,600	400			
Do	Signal Hill	do					
Los Nietos Co., operator	Coalinga Nose	Coalinga	714			952	
P. S. Magruder, operator:							
Huffman plant	Kettleman Hills	Avenal	1,667	714	238		238
Western States plant	do	do	1,667	833	357		238
Ohio Oil Co., operator	South Coles Levee	Bakersfield (Taft) [4]	3,400	600	500		400
Rice Ranch Oil Co	Orcutt	Santa Maria (Orcutt)	71				
Richfield Oil Corp	North Coles Levee	Tupman (Taft)	952	1,905		1,071	
Do	Russell Ranch	Maricopa	476	548		333	
Do	South Cuyama	do	1,143	1,071			286
Shell Oil Co	Brea	Brea	1,190				
Do	Capitan	Santa Barbara (Goleta)	95	10			
Do	Dominguez Hill	Compton	357				
Do	Long Beach	Signal Hill	1,000				
Do	Santa Maria	Orcutt	36				
Do	Ten Section	Bakersfield	833	833	476		357
Do	Ventura	Ventura	7,142	1,786			
Signal Oil & Gas Co	Signal Hill	Signal Hill	1,282	266			
Do	Elwood	Goleta	125	24		42	

Do	Ten Section	Ventura	7,142	1,786			
Do	Ventura						
Do							
Signal Oil & Gas Co	Signal Hill	Signal Hill	1,282	266			
Do	Elwood	Goleta	125	24		42	
Do	Huntington Beach	Huntington Beach	2,400	42		585	
Standard Oil Co. of California	Santa Fe Springs	Santa Fe Springs	952				
Do	Murphy Coyote	LaHabre	2,381	476			
Do	Huntington Beach	Huntington Beach	952	286		48	
Do	Seal Beach	Seal Beach	833				
Do	Inglewood	Inglewood	833				
Do	Torrance	Torrance	286				
Do	Midway Sunset	Taft	1,072	357			
Do	do	do	476				
Do	do	do	476				
Do	Kettleman Hills	Avenal	1,190				
Do	do	do	1,858	1,595	904	476	595
Do	do	do	1,190				
Do	Mountain View	Lamont (Bakersfield)	405				
Do	Lost Hills	Lost Hills	95				
Do	Greeley	Bakersfield	476	524		476	
Do	Northeast Coalinga	Coalinga	833				
Sunray Oil Corp	Newhall-Potrero	Newhall	405	650	300		
Superior Oil Co	Rio Bravo	Shafter (Bakersfield)	476	952	595		357
The Texas Co	Santa Fe Springs	Santa Fe Springs	833	50			
Do	Shiells Canyon	Santa Paula	476	428		286	
Do	Signal Hill	Long Beach	1,548	214			
Tidewater Associated Oil Co., plants 2, 4, and 6	Ventura	Ventura	2,150	1,200	660		490
Union Oil Company of California	Belgian Anticline	McKittrick	214				
Do	Brea Olinda-Stearns	Brea	1,310				
Do	Dominguez	Compton	1,333				
Do	Grimes Canyon	Fillmore	83				
Do	Sansinena	LaHabra	190				
Do	Playa del Rey	Venice	143				
Do	Richfield	Placentia	286				
Do	Rosecrans	Compton	643				
Do	Santa Fe Springs-Bell	Santa Fe Springs	1,381				
Do	Santa Maria Valley	Santa Maria	1,071			238	
Do	Orcutt	Orcutt	619			214	
Do	Del Valle	Newhall	1,024			476	
U. S. Naval Reserve, unit operation, (Standard Oil Co. of Calif., operator),[5]	Elk Hills	Tupman (Taft)	119				
West Coast Refining Co	Richfield	Atwood (Placentia)	1,200				
Western Gulf Oil Co., operator	Paloma	Bakersfield [4]	5,200	2,400	1,100		
Wilmington Gasoline Co	Wilmington	Wilmington	1,667	1,065	250		200
		Plants:					
		Operating [3] 73	75,460	20,953	6,264	5,932	3,261
		Shut down 1	476				
		Total 74	75,936	20,953	6,264	5,932	3,261

[1] Dismantled.
[2] Fractionator; not included in totals.
[3] Shut down.
[4] Includes cycle condensate capacity.
[5] U. S. Naval Reserve mothballed plant at Elk Hills not included.

Refinery and cracking plant operators

Company	Address	Number of plants
American Bitumuls & Asphalt Co	200 Bush St., San Francisco 4	1
Aromalene, Inc	1840 East 29th St., Signal Hill, Long Beach	1
Bankline Oil Co	437 South Hill St., Los Angeles 13	2
Calstate Refining Co	2930 Cherry Ave., Long Beach 7	1
The Caminol Co	525 West 3d St., Hanford	1
Century Oil Co	1841 East 29th St., Long Beach	1
Douglas Oil Co. of California	8622 East Compton Blvd., Paramount	3
Edgington Oil Refineries, Inc	2400 East Artesia Blvd., Long Beach	1
Edgington-Oxnard Asphalt Co	117 Deodar, Oxnard	1
Envoy Petroleum Co	1601 East Spring St., Long Beach 6	1
Eureka Refining Corp	3328 Elm Ave., Long Beach 7	1
Fletcher Oil Co	24721 South Main, box 548, Wilmington	1
General Petroleum Corp	Post Office Box 2122, Terminal Annex, Los Angeles 54.	1
Golden Bear Oil Co	325 West 8th St., Los Angeles 14	1
Hancock Oil Co	2828 Junipero Ave., post office box 810, Long Beach 1.	1
Harbor Refining Co	2542 South St., Long Beach	1
McMillan Petroleum Corp	530 West 6th St., Los Angeles 14	1
McCallen Refining Co., Ltd	Post office box 550, Huntington Beach	1
Mohawk Petroleum Corp	Post office box 1476, Bakersfield	1
Newhall Refining Co	Post office box 638, Newhall	1
Olympic Refining Co	2525 California Ave., Long Beach	1
Oxnard Oil & Refining Co	Post office box 1428, Oxnard	1
Pabco Products, Inc	475 Brannan St., San Francisco	1
Palomar Oil & Refining Corp	Post office box 1736, Bakersfield	1
Richfield Oil Corp	555 South Flower St., Los Angeles 17	1
Rothschild Oil Co	12354 East Lakeland Rd., Sante Fe Springs	2
Seaside Oil Co	330 State St., Santa Barbara	1
Shell Oil Co	100 Bush St., San Francisco 6 and 50 West 50th St., New York 20, N. Y.	2
Socal Oil & Refining Co	Box 430, Huntington Beach	1
Standard Oil Company of California	225 Bush St., San Francisco 20	3
Sunland Refining Corp	Post office box 1512, Fresno 16	
Sunray Oil Corp	Petroleum Securities Bldg., 714 West Olympic Blvd., Los Angeles 15.	1
Sunset Oil Co	3450 Wilshire Blvd., Los Angeles 5	1
Superior Asphalt Co	Route 2, box 139, Oxnard	1
The Texas Co	929 South Broadway, Los Angeles 15	1
Tide Water Associated Oil Co	79 New Montgomery St., San Francisco 20	2
Triangle Oil & Refining Co	Post office box 563 Washington St., Venice	1
Union Oil Company of California	617 West 7th St., Los Angeles 17	4
Western Asphalt & Refining Co	Post office box 225, Santa Maria	1
Wilshire Oil Co., Inc	1200 Statler Center, 900 Wilshire Blvd., Los Angeles 17.	1
Total		51

Natural gasoline, liquefied petroleum gas, and cycle condensate manufacturers

Company	Address	Number of plants
Bankline Oil Co	437 South Hill St., Los Angeles 13	2
Belridge Oil Co	815 Edison Bldg., 601 West 5th St., Los Angeles 17	1
Brea Canon Oil Co	832 Standard Oil Bldg., Los Angeles 15	1
Coline Gasoline Corp	4549 Produce Plaza, West Los Angeles 58	1
Cowan Oil & Refining Co	534 Bartlett Bldg., Los Angeles 14	1
Fullerton Oil Co	380 East Green St., Pasadena 1	1
General Petroleum Corp	Post Office Box 2122, Terminal Annex, Los Angeles 54.	5
Honolulu Oil Corp	215 Market St., San Francisco 5	2
Inglewood Gasoline Co	424 South Beverly Dr., Beverly Hills 14	1
Lomita Gasoline Co	2901 Orange Ave., Post Office Box 851, Long Beach	2
Los Nietos Co., operator	617 West 7th St., Los Angeles 17	1
P. S. Magruder, operator, Western-Huffman gasoline plants.	612 South Flower St., Los Angeles	2
Ohio Oil Co	437 South Hill St., Los Angeles 13	1
Rice Ranch Oil Co	Post Office Box 31, Santa Maria	1
Richfield Oil Corp	555 South Flower St., Los Angeles 17	3
Shell Oil Co	1008 West 6th St., Los Angeles 17	7
Signal Oil & Gas Co	811 West 7th St., Los Angeles 17	3
Standard Oil Company of California	255 Bush St., San Francisco 20	16
Sunray Oil Corp	714 West Olympic Blvd., Los Angeles 15	1
The Superior Oil Co	601 West 5th St., Los Angeles 17	1
The Texas Co	929 South Broadway, Los Angeles 15	3
Tide Water Associated Oil Co	79 New Montgomery St., San Francisco	1
Union Oil Company of California	617 West 7th St., Los Angeles 17	12
U. S. Naval Reserve, unit operation (Standard Oil Company of California, operator).	Tupman	1
West Coast Refining Co	909 National Oil Bldg., 609 South Grand	1
Western Gulf Oil Co	1200 Statler Center, 900 Wilshire Blvd	1
Wilmington Gasoline Co	1100 Statler Center, 900 Wilshire Blvd., Los Angeles 17.	1

Mr. KIRK. The second one is also taken from the Bureau of Mines. However, this is a tabulation taken from the monthly Bureau of Mines report, which are issued each month in district V. It shows here by months, expressed in barrels per day, the quantity of crude oil and products received on the west coast from sources outside of the west coast, by all means of transportation—that is, by truck, trailer, by tank car, and also by vessel. It is a tabulation taken from the Bureau of Mines records, for the years 1942 through 1945.

Mr. HÉBERT. Well, what has that to do with today?

Mr. COURTNEY. What pertinence would that have to today?

Mr. KIRK. Well, there have been several figures as to the receipts of products and crude on the west coast during the Second World War, various figures of 150,000 barrels a day and 160,000 barrels a day, and this shows the actual records as published by the Bureau of Mines, a Government agency. So we thought it would be pertinent and useful to the committee.

Mr. HÉBERT. Without objection, it will be made a part of the record.

(The information follows:)

PACIFIC COAST PETROLEUM INDUSTRY

Receipts of crude petroleum and petroleum products into Pacific coast territory from other areas, years 1942–45

[Barrels daily]

Year and month	Crude petroleum	Petroleum products	Total	Year and month	Crude petroleum	Petroleum products	Total
1942				1944			
January	2,766	5,034	7,801	January	4,818	18,580	23,398
February	3,336	5,785	9,120	February	3,878	19,346	23,224
March	4,288	6,323	10,611	March	4,550	17,033	21,583
April	3,277	6,300	9,577	April	5,000	22,200	27,200
May	2,998	5,997	8,995	May	3,922	22,838	26,760
June	2,696	5,835	8,531	June	4,223	34,766	38,989
July	3,566	4,647	8,213	July	4,290	18,970	23,260
August	4,745	5,065	9,810	August	4,428	33,160	37,588
September	3,832	5,733	9,565	September	4,710	20,500	25,210
October	3,945	5,386	9,331	October	4,262	22,520	26,782
November	3,902	6,565	10,467	November	4,870	27,199	32,069
December	3,570	8,386	11,956	December	4,508	29,483	33,991
Annual average	3,581	5,921	9,502	Annual average	4,456	23,882	28,338
1943				1945			
January	3,150	6,356	9,506	January	8,005	28,481	36,486
February	3,761	9,213	12,974	February	15,639	28,145	43,784
March	4,218	10,321	14,539	March	18,366	24,677	43,043
April	5,360	7,199	12,559	April	20,900	27,434	48,334
May	5,137	7,935	13,072	May	26,620	32,549	59,169
June	4,893	8,433	13,326	June	33,703	31,133	64,836
July	4,730	9,481	14,211	July	34,895	28,484	63,379
August	4,554	11,162	15,716	August	39,348	23,320	62,379
September	5,277	11,401	16,678	September	5,231	14,865	20,096
October	5,162	21,162	26,324	October	3,222	11,225	14,447
November	5,041	13,167	18,208	November	3,170	9,533	12,703
December	4,879	16,581	21,460	December	3,396	11,130	14,526
Annual average	4,682	11,060	15,742	Annual average	17,745	22,556	40,301

Source: U. S. Bureau of Mines Statement Form 1-B.

Title: The Petroleum Situation in the Pacific Coast Territory (California, Oregon, Washington, Arizona, and Nevada).

Mr. KIRK. I now have three articles here that pertain to crude oil producability and reserves in Canada. We thought, in reading over the record or transcript, that we could probably be of some service by getting more information into the record as to the potential crude oil production in Canada and the reserves, as are estimated by various people.

The first one I have is a statement here by Mr. I. N. McKinnon, Chairman of the Petroleum and Natural Gas Conservation Board, the Province of Alberta, in which he gives a history of production and producability from 1947 through 1954, and an estimate up to 1960.

Mr. HÉBERT. Any member of the committee desire any questions on that subject, as it is current?

Mr. Short, do you desire to ask any questions on the Canadian situation?

Mr. SHORT. What are the estimated reserves?

Mr. KIRK. Proven recoverable reserves——

Mr. SHORT. Is this all Canada?

Mr. KIRK. This is Alberta.

Mr. SHORT. Just Alberta?

Mr. KIRK. Yes, sir.

Mr. SHORT. Province of Alberta?

Mr. KIRK. Yes, sir. That eliminates Saskatchewan and Manitoba.

Mr. SHORT. Yes.

Mr. KIRK. This is the principal one, however.

Mr. SHORT. Yes.

Mr. KIRK. It shows the reserves as of 1955, of 2.5 billion barrels. Potential production of 492,000 barrels per day. And actual estimated 300,000 barrels a day.

Mr. SHORT. That is actual production?

Mr. KIRK. Yes, sir.

Mr. SHORT. Today?

Mr. KIRK. It is still estimated for 1955, however.

Mr. SHORT. 300,000 barrels?

Mr. KIRK. 300,000 barrels a day. He shows——

Mr. SHORT. Is all of that going to the west coast?

Mr. KIRK. Oh, no.

Mr. SHORT. Where does it go? How much goes to Vancouver and how much to Ferndale?

Mr. KIRK. Well, approximately 27,000 barrels a day is now going to Ferndale and approximately 55,000 to British Columbia-Vancouver area. The rest of it is used locally and goes east.

Mr. SHORT. Do they have a pipeline east?

Mr. KIRK. Yes, sir.

Mr. SHORT. How large is it? It goes to the region of Ontario; does it not?

Mr. KIRK. Yes; it goes as far as Sarnia.

Mr. SHORT. Sarnia.

Mr. KIRK. Yes, sir.

Mr. SHORT. Which is in that area.

Mr. KIRK. Yes, sir. I don't know but that pipeline capacity—I suppose it is about a 22- or 24-inch.

Mr. SHORT. Yes.

Mr. KIRK. He also shows that under good engineering practice, that crude oil productibility by 1960 will approach one million barrels a day in Alberta.

Mr. COURTNEY. He—what did you say this gentleman's name was?

Mr. KIRK. This is I. N. McKinnon, and he is chairman of the Petroleum and Natural Gas Conservation Board, Province of Alberta.

Mr. COURTNEY. Now that is a government body, I take it?

Mr. KIRK. Yes, sir.

Mr. COURTNEY. Mr. Chairman, for what pertinence it may have, may that be made a part of the record?

Mr. HÉBERT. Without objection.

(The document is as follows:)

CALGARY, ALBERTA, *July 22, 1955.*

Mr. CHARLES S. JONES,
President, Western Oil & Gas Association,
Los Angeles, Calif.

DEAR MR. JONES: In response to your telegram dated July 22, 1955, attached hereto is a statement outlining the board's views with respect to the present situation and future prospects for crude oil production in Alberta. The board is not in a position to comment on the present and future prospects for crude-oil production in the other oil-producing provinces in western Canada; namely, Saskatchewan and Manitoba.

I might state that the board is of the opinion that there will be no difficulty in meeting a substantial demand for Alberta crude oil from the Pacific Northwest United States, one of our present market outlets.

Yours very truly,

I. N. McKINNON, *Chairman.*

PROVINCE OF ALBERTA

RESERVES—POTENTIAL AND ACTUAL PRODUCTION OF CRUDE OIL [1]

Today Alberta is capable of producing, under good engineering practice, approximately 500,000 barrels of crude oil per day. The proven recoverable reserves of the Province are of the order of 2.4 billion barrels. Actual production during 1955 is expected to average 300,000 barrels per day. The attached tabulation shows the proven recoverable reserves and the potential and actual production by years for the period 1947–55 inclusive. The figures for 1955 are estimated on the basis of data to June 30, 1955.

The board is confident that further substantial reserves of crude oil remain to be discovered. This belief is based not only on recent discoveries of major oil accumulations in the extensive Cardium and Mississippian formations, but also on the known occurrences of Upper Devonian reefs within a large area of western Alberta which is so far virtually unexplored.

Assuming the existence of sufficient market outlets to provide an incentive for the necessary exploration and development, the board estimates that potential production (under good engineering practice) will approach 1 million barrels daily by 1960.

PROVINCE OF ALBERTA

Reserves—Potential and actual production of crude oil

Year	Proven recoverable reserves (millions of barrels, year end)	Production (thousands of barrels per day, average)		Year	Proven recoverable reserves (millions of barrels, year end	Production (thousands of barrels per day, average)	
		Potential	Actual			Potential [1]	Actual [2]
1947	0.2	17	17	1952	1.6	264	161
1948	.5	29	29	1953	1.9	316	210
1949	.9	79	54	1954	2.2	342	240
1950	1.1	146	74	1955	[3] 2.5	492	[3] 300
1951	1.3	203	126				

[1] Under good engineering practices as reflected by board set MPR's. Figure for 1955 is as of June 30.
[2] Under proration to market demand from 1950 on.
[3] Estimated.

Source: The Petroleum and Natural Gas Conservation Board, Calgary, Alberta, Canada.

Mr. COURTNEY. You have something else now, Mr. Kirk?

Mr. KIRK. Yes, sir; I have two other items. I have a copy of an address here by——

Mr. SHORT. Just before you leave that, counsel.

Mr. COURTNEY. Yes.

Mr. SHORT. These oil wells in Canada are financed by American capital as well as local Canadian capital.

Mr. KIRK. I am sure that is true, that some of them are. There are American companies operating in Canada as well as Canadian companies.

Mr. SHORT. American companies?

Mr. KIRK. Yes, sir.

Mr. SHORT. Do you know which ones?

---

[1] The Petroleum and Natural Gas Conservation Board, Calgary, Alberta, Canada, July 22, 1955.

Mr. KIRK. I could not name them for you. I think there are many of them.

Mr. SHORT. Many of them?

Mr. KIRK. Yes, sir.

Mr. COURTNEY. Will you proceed? You have something else that you say bears on this question?

Mr. KIRK. Yes. This is an address by Mr. W. O. Traits, vice president and director, Imperial Oil, Ltd. It is a talk he made to the American Institute of Mining and Metallurgical Engineers in Chicago, on February 15, 1955.

The subject is: "Canadian Oil at the Eighth Milestone."

It is a review of Canadian history of oil from 1947 through 1955.

Mr. COURTNEY. Imperial Oil is one of the larger oil companies in Canada, is it not?

Mr. KIRK. Yes, sir.

Mr. COURTNEY. Does it operate in the Alberta and Saskatchewan fields?

Mr. KIRK. Yes, sir; to the best of my knowledge.

Mr. COURTNEY. Is it a producing or a distributing company?

Mr. KIRK. As far as I know, they do both.

I also, incidentally, have a telegram here, from the Aime, releasing this——

Mr. COURTNEY. This, Mr. Chairman, was a copyright reserved document, and when it was first presented I suggested to Mr. Kirk that he obtain the release for the use of such parts of the text as relate to this subject under present inquiry. And you have that telegram?

Mr. KIRK. Yes, sir.

Mr. COURTNEY. Mr. Chairman, may that be made part of the record?

Mr. HÉBERT. Without objection, both the text and the telegram will be included.

(The documents are as follows:)

W. F. KIRK,
Statler Hotel, Washington, D. C.:

AIME authorizes you to include Paper 471–G, Canadian Oil at the Eighth Milestone, by W. O. Twaits, Imperial Oil Co., as part of the record for the House of Representatives Committee on Armed Services Subcommittee for Special Investigations Relative to West Coast Pipeline Matter.

JOE B. ALFORT,
Executive Secretary, Petroleum Branch, AIME.

AN ADDRESS BY W. O. TWAITS, VICE PRESIDENT AND DIRECTOR, IMPERIAL OIL, LTD.

I should like to say at the beginning that the opportunity to address you is welcome on two counts: First, because of the honor inherent in an opportunity to speak to such a top-ranking professional group as represented in the AIMME; second, because this honor coincides with the eighth anniversary of a discovery which to Canadian oilmen ranks with that made by Columbus.

The finding of crude oil at Leduc, Alberta, 8 years ago February 13, had some other similarities with the experiences of Christopher Columbus. As with the discovery of America, the significance of finding oil in Canada was not immediately recognized. Today, at the comparatively advanced age of 8, and with an unprecedented rate of growth, there are few who are not aware of the size or importance of the Canadian development.

It seems appropriate at this time to examine some of the factors influencing the economic behavior of this new supply source—not in detail but rather in terms of future growth.

The stature of present Canadian oil can be measured with considerable ease and a minimum of statistics. Eight years of progress has brought the industry to the point where it supplies the needs of virtually all of Canada west of Toronto

on Lake Ontario, in marked contrast with the 1947 situation in which an area near the Arctic Circle and another around Calgary were the only sections supplied with local crude.

This widening of the area supplied reflects the growth of total reserves from 72 million barrels to some two and three quarter billion and of daily average production from a declining position at 20,000 to a position with excess MER at 260,000 barrels. Potential production has risen to around 420,000 barrels. There are a great many other measurements of progress which we could enumerate but the one which is perhaps most striking from a Canadian viewpoint is that current production with a 1954 gross value of $245 million effects a foreign exchange saving of considerably more than that amount. This saving of foreign currency is in United States dollars, and is augmented by the inflow of additional cash for investment in oil development by companies and individuals.

This aspect is the more noteworthy because 1947 was a year of crisis for Canadian currency. Drastic controls were introduced in that year to prevent the Canadian dollar from going to an excessive discount. Today, after 8 years of oil development, our chief exchange problem is to prevent the Canadian dollar from going to an excessive premium.

In fact, the exchange premium is currently costing Canadian producers some 10 cents per barrel in wellhead price which is the amount by which competitive imports are reduced in price by the exchange differential.

While it would be wrong to credit oil with being more than one factor among many in changing Canada's exchange rate, it is certain that the oil development has contributed heavily to a northward shift which has taken place in the continent's economic center of gravity. Canadian oil, together with other resource development, has helped to change continental relationships.

The continental aspect soon strikes any serious student of the development, whether from a geological, financial, industrial, economic or strategic standpoint. From all points of view, Canadian oil has continental implications and involvements.

Geologically, the western Canada basin is a part of the central sedimentary area running from the Gulf of Mexico to the Arctic Ocean. For the most part, the Canadian development has naturally involved similar operating techniques to those used in the midcontinent, Rocky Mountains and Permian basin areas. The Canadian climate and terrain in some parts of the basin introduce complicating factors not usually experienced in the United States.

In northern areas remote from settlement, the requirements of camps and special equipment have to be geared to extremes of temperature and occasionally to long periods of isolation. By and large, any additional costs involved are a function only of terrain and remoteness, rather than international boundaries.

From a financial standpoint the continental aspect is also pronounced. The Canadian development has been financed in basically similar fashion to that in the United States, that is, with risk capital furnished by earnings plowed back by the oil industry, with risk money from the investing public and mortgage money from lending institutions.

In this connection, the role that new United States capital has played in the Canadian development is important and yet sometimes exaggerated. While it is not possible to state with any degree of accuracy the extent to which the Canadian oil industry has been financed by funds from the United States, in terms of book value United States investment now represents some 50–60 percent of the total investment.

It is worth noting that all types of operations have been represented in this movement of capital from the major oil companies to the lease brokers. This percentage, of course, is substantial—with cumulative expenditures to date amounting to $2,600,000,000. But more surprising is that Canadian capital should have contributed as much as it has to the development when the small extent of crude oil resources prior to 1947 is taken into account.

Perhaps the most significant difference between the United States and Canadian scenes from an operational standpoint is the ownership by the provincial governments, of from 50 to, in some areas, 100 percent of mineral rights. This means that the mineral owner's revenues which go to enrich the landowner in United States oil-producing areas, largely go to enrich the provincial governments in Canada.

In ancillary industry, such as petrochemicals, etc., the Canadian development has been closely similar to the continental pattern, but since it has taken place in the heart of the continent, in an area with comparatively little previous industrial development, the impact has been very apparent.

The rate and character of oil development since Leduc has been influenced by a combination of factors worth noting. Discovery of two major pools at Leduc and Redwater within a year, in an area dependent on high-cost imported supplies, led to rapid expansion of local refinery capacity and early justification for a major pipeline outlet.

At the same time, lease obligations on Government lands were generally designed to promote rapid evaluation in the exploration stage and rapid development after discovery.

In all western provinces, regulations on Government land involve work obligations and graduated rentals during the exploration phase; after discovery, leasing on a checkerboard pattern leaves proven acreage for sale by closed tender bidding to the Government.

This has and continues to be an important economic factor since the Government holds mineral titles on 50 percent to 100 percent of acreage in western Canada. In this atmosphere, pressures and problems that have taken many years to evolve in other areas were quickly generated. The Canadian industry has had to condense a great deal of experience into a few short years, and it was inevitable that it should borrow from the accumulated oil history of the United States.

Conservation legislation and regulatory practices have been established with the full background of legal and operating experience of the Mid-Continent and Texas. Prorationing to market demand was set up in Alberta early in the conservation program.

Provincial administration has been of a very high order with full recognition given to the identity of interest between producer and mineral owner. At the same time a strong industry association has grown up to handle the manifold problems of industry and public relations which were all the more acute because of rapid development.

One of the advantages that we have gained from experience abroad is that we are able at this early stage to better evaluate crude reserves and ultimate potentialities of the Canadian region. Reserves of light crude, currently estimated at as high as 2¾ billion barrels rose by 370 million barrels in 1954, which may in time with revisions and extensions approach 600 million barrels. This is six times the year's crude production.

On the basis of exploration experience to date in United States sections of the continental basin, the prospective area of Canada should develop from 20 to 25 billion barrels of light crude over a normal producing generation. There are, of course, additional resources in the form of heavy crudes, oil shales and the famous tar sands of Athabaska—the latter alone being estimated at the equivalent of 100 to 300 billion barrels.

We don't have to speculate on the tar sands to assess the importance of future Canadian oil prospects. The estimate for light oil of 20 to 25 billion barrels is sufficient to forecast a producing rate of several million barrels daily, and a lasting development of petroleum energy on a large scale. Of course, this is a long-term viewpoint in which time is a relative term.

The current problem of Canadian oil is not connected with ultimate possibilities so much as with proximate realities. Today, western Canada has a potential at MER rates of about 420,000 barrels daily. Actual production for 1955 will probably average about 330,000 barrels daily, with closed in production of some 100,000 barrels daily of 30 percent. The markets being supplied in 1955 will, it is estimated, consist of the following areas and average year's quantities.

	Barrels daily
West coast	86,000
British Columbia	49,000
Puget Sound	37,000
The Canadian Prairie Provinces	118,000
Eastern movement	126,000
The United States Lakehead-Minneapolis area	21,000
Ontario	105,000
Total	330,000

Canadian crude has spread out to serve these markets in three successive phases. First came the prairie provinces, whose needs were satisfied by the middle of 1949 with the completion of refinery expansion programs. Then followed extension eastward to Ontario, by construction of the interprovincial pipeline which now extends some 1,700 miles from Edmonton to Sarnia. This system has an ultimate capacity of about 300,000 barrels per day.

The movement into Sarnia brought Canadian oil into competition with the many and varied supplies extering the Great Lakes market. With major pipeline systems from the gulf, midcontinent, and Rocky Mountain areas, plus offshore supplies moving west from Montreal and the Hudson River Canal, this area represents worldwide oil competition. The price of Canadian crude accordingly has reflected, and continues to reflect, all these forces.

The latest market to be added, British Columbia and the Pacific coast, came with the completion of the Trans Mountain pipeline in 1953.

No price reduction was required to establish this movement since limiting competition was set in the eastern market. At present, despite low ocean-tanker rates, Canadian crude is competitive in this area with all sources of supply.

In these various advances, the economic development of Canadian crude has been molded by its peculiarly landlocked environment—a characteristic which has had an unusually marked influence on its past development and future prospects.

Reduced to somewhat oversimplified terms, the landlocked feature of Canadian crude means that it must compete at long range with offshore imported crudes. And where the orbits of most competitive crudes are conditioned by large ocean-tanker transportation costs, Canada's crude must adapt itself economically to pipeline transport costs. In other words, Canadian crude must move at costs of roughly 3 cents per 100 barrel-miles in big-inch pipeline systems.

Tanker-borne crude, traveling at perhaps 1 cent per 100 barrel-miles can be moved well over 5,000 miles for as much as it costs to move western Canadian crude the 1,770 miles from Edmonton, Alberta, to Sarnia, Ontario. In effect, Canadian crude must absorb 4 cents per 100 barrel-miles moving toward tidewater competition. It is also apparent that the water-borne crude has the advantage in flexibility of route as well as cost.

The comparatively rigid and high-cost transportation connections through which Canada's crude must operate imply two basic economic considerations for the industry.

First, that Canadian crude prices will inevitably reflect a heavy transporation penalty.

Second, that any decision for marketing Canadian oil, due to the relative inflexibility of the transportation system, will have very lasting effects.

I should perhaps repeat a third consideration:

Since the majority of mineral rights in western Canada are held in trust for the people, the governments of these provinces represent the mineral owners' interest in gaining the best possible return for oil at the wellhead. This strengthens the natural objective of the producer to gain the best possible price for his oil. Added to the comparative rigidity of an industry which must operate on interior continental lines, it lends further emphasis to the industry's desire to avoid any unnecessary, though nonetheless permanent, transportation penalties.

The relative wellhead prices of comparable American crudes—translated into United States currency—show this transportation disadvantage as follows:

	Per barrel
Edmonton (Redwater)	$2.58
Rocky Mountain	2.80
Mid-Continent	2.80
Gulf	2.80
Califorina	3.21
Venezuela (f. o. b. tanker)	2.85

The figures demonstrate the price situation as it stands today and why, facing a differential of 22 cents or more per barrel, Canadian oilmen must stop to consider before risking any further detraction from the long-term attractiveness of western Canada as an area in which to look for crude oil. Canadians sometimes think of all mining and mineral production as being similar to gold with its fixed high price which makes it profitable to search for gold in almost any part of the world. With the increasing emphasis on crude mineral production, such as oil and iron, it is becoming realized that many minerals are only valu-

able if they can be brought cheaply to good markets, a state of affairs which can by no means be taken for granted.

One deduction from these various considerations is that western Canadian crude can probably never economically supply the entire Canadian market. The shortest route of physical movement from Edmonton to Halifax would be over 3,000 miles. From Edmonton to Montreal is about 2,300 miles. Perhaps the longest overland supply route traveled by crude in the United States is from west Texas to the Great Lakes—well under 1,500 miles. Without entering into other factors, it seems that the Canadian eastern seaboard market presents a most difficult transportation hurdle. On the other hand, the distance factor which limits eastward expansion is an advantage on the west coast where alternative supplies have a much longer haul.

This consideration, taken in conjunction with our growth forecasts which indicate a daily potential of more than 1 million barrels by 1960, poses as neat a set of problems as any 8-year-old ever had to solve.

To begin with, no rational forecast of Canadian demand indicates more than 650 M b. d. by 1960 for the Nation as a whole, and of this 650 M b. d., only 400 M b. d. is in the parts of Canada now being supplied with western Canadian crude. If we add in the Puget Sound, already being supplied with Canadian crude, and allow for the probable growth in demand of these present marketing areas, the outlet for Canadian crude grows to 550 M b. d. by 1960, still not much more than half the potential, and there will still be some 400 M b. d. or more looking for market.

An obvious suggestion is that the pipeline should be extended to Montreal, which by 1960 should be consuming up to 200 M b. d. This has some superficial appeal, since the economies of larger-scale pipeline transport would help to offset the wellhead price reductions necessary to compete with offshore supplies. But the end result would commit western crude to compete at the end of a 75-cent haul, against the Gulf and Caribbean operating some 37 cents away from their home base. That is, Canadian crude would be committed, and committed through the inflexible medium of a pipeline, to compete with these crudes at double the transport handicap.

In a period of ample supply, reducing price is no assurance of capturing a market, but the big catch is the permanence of such price reduction and its effect on future development. The realization of this aspect has led some people to suggest imposing a protective tariff on crude entering Canada.

Now, most oilmen find tariffs, quotas, and other trade restrictions repugnant in principle, even though there seem to be exceptions which justify such practices. Only a very serious situation could justify such a move, especially by a country which has so good a record in trading practices as Canada.

Moreover, there are practical objections to such a tariff proposal. The first is that while a tariff might temporarily help to extend the market eastward, it would have the effect of limiting the competitive position of the crude in other directions. In fact, a tariff in this case could only be construed as a form of transportation subsidy.

A second objection is that gasoline is already one of the most heavily taxed commodities in Canada—far more so than in the United States—and any additional tax on this major source of energy would represent a handicap to the ability of Canadians to carry on their work economically and competitively.

What then, is the answer to the problem of future outlets for Canadian crude? If "future" is defined as some time beyond the point of accurate prediction, then the answer is exceedingly simple—the problem will disappear.

We have been talking about the problem of 1960, the stage at which Canada's growing crude potential finds the bonds of land transportation most restricting. And we are approaching the problem of 1960 with the thinking of 1955, a year in which oil supplies are ample, and nationalistic as opposed to continental thinking tends to be tolerated.

I suggest that a realistic look at the future must take into account a growth in continental oil requirements to a figure of 12 to 14 million barrels per day in the next 20 years. Now, no matter how pressing current problems of market outlet are, I think we can agree that the normal optimism of oil seekers will have plenty of latitude in this outlook. Our long-term problem really is to insure the maximum rate of exploration effort and the maximum development of oil resources against this outlook. Within this framework, the forecasted Canadian production is not a problem but an essential.

The timing of new resources and new needs is a function of many factors which we can neither predict nor control. But we do have the historical record

of the oil business to show that the joint forces of supply and price cannot remain out of equilibrium for any length of time. In this equilibrium, it is axiomatic that oil supplies should move to the nearest and best-priced market, representing the maximum incentive to the producer and the royalty owner. Any devices which endeavor to ignore this axiom must inevitably distort or retard sound development.

Our appraisal indicates that in the short-run outlook, the solution to successive marketing problems will probably be piecemeal. Western Canada's markets will grow city by city, and refinery by refinery, rather than by the tremendous leaps they have taken in the first 8 years. What we can look forward to is steady growth and consolidation. Possibly this is the best indication that at the eighth milestone Canadian oil is approaching maturity.

Mr. COURTNEY. Mr. Kirk, I believe you have a correction in the record itself?

Mr. KIRK. I have a third one, the last one.

Mr. COURTNEY. Yes.

Mr. KIRK. This is an article in the Oil and Gas Journal dated March 11, 1955. It is written by Mr. C. O. Willson, and the title is: "Canada's Rising Oil Flow to the United States."

I also have a telegram here releasing this for use as part of the record.

Mr. COURTNEY. That relates to the current situation?

Mr. KIRK. Yes, sir.

Mr. HÉBERT. Without objection, both the telegram and article will be made a part of the record.

(The information follows:)

JULY 25, 1955.

WESTERN OIL & GAS ASSOCIATION,
FRANK ROGERS AND W. F. KIRK:

Concerning article by C. O. Willson, pages 84–86, our July 11, 1955, edition, entitled Canada's rising oil flow to the United States, this telegram constitutes our permission to enter it in hearing before House of Representatives, Committee on Armed Services, Subcommittee on Special Investigations dealing with west coast pipeline matters.

KENNETH B. BARNES,
Editor, the Oil and Gas Journal.

LONG-RANGE GOVERNMENT, PRIVATE POLICY IS INVOLVED IN CANADA'S RISING OIL FLOW TO THE UNITED STATES

Canada is beginning to assume a larger role in the United States crude-oil supply picture. Oil from Canada's great discoveries in the western Provinces is flowing across the United States border in a steadily rising stream.

It is estimated conservatively that imports from Canada will double within a few months. And this is only a start. Canadian oil already is competing with supplies from Illinois, the midcontinent, and Rocky Mountain areas. As a nation heading for a big production surplus, Canada must compete increasingly in markets largely determined by conditions in the United States and the rest of the world. Canadian output this spring reached 234,000 barrels daily. If present firm forecasts are borne out, the figure will soar to 3,500,000 barrels daily by 1980. That is more than half the present United States production.

Most of Canada's oil is produced by United States companies with no refining or marketing facilities in Canada. But where will this tremendous output find a market? All signs point in the same direction: There will be more and more Canadian oil in America's future.

By C. O. Willson

Western Canada's steadily increasing oil production is rapidly becoming a significant factor in the petroleum supplies of the United States.

Canadian crude imports into the United States have already reached 30,000 barrels daily, according to latest official figures for April. Imports to the lakehead refineries in Wisconsin and Minnesota averaged 4,000 barrels daily. They were 26,000 barrels daily to the Puget Sound area of Washington.

And the total is considered certain to double at least over the next few months.

Pipeline connections have been completed for two new United States refineries which will operate with Canadian crude oil. They are the 50,000-barrel refinery of Shell Oil Co. at Anacortes, Wash., and Great Northern Refining Co.'s 25,000-barrel refinery at Pine Bend (near St. Paul), Minn.

They are scheduled to be on stream by late summer and early fall.

It is understood that crude shipments to still another Minnesota refinery will start this fall.

The extension of Canadian crude-oil outlets into the United States was foreseen 7 years ago when potentialities of Leduc and Redwater fields in Alberta were first realized. Now the flow of Canadian oil across the border is rising steadily.

And the end is not in sight. The early fields have been followed by a number of discoveries, some of major importance, in the western Provinces. Current production of Canada is 234,000 barrels daily. Available production is at least 100,000 barrels daily greater than that figure.

There is general agreement that this figure of availability will jump to at least 1 million barrels daily within the next 5 years. This projection appears justified on the basis of present discoveries.

RESERVES TO SOAR

Furthermore, few have challenged predictions that proved reserves in western Canada, now approaching 3 billion barrels, will increase to 20 to 25 billion barrels not later than 1980.

This reflects the confidence of explorationists and operators that the successes since the Leduc discovery of 1947 will lead to additional finds over the next 25 years which will make western Canada one of the world's major oil areas.

Evidence points to a yearly increase in available production of around 150,000 barrels daily until at the end of the 25 years the reserves would justify a daily production of 3½ million barrels.

Most Canadian operators are willing to let this long-range outlook take care of itself. But they are concerned with what appear to be assured trends over the next 5 years.

Canada's domestic demands are expected to total 650,000 barrels daily by 1960. Should the present division of markets prevail at that time, 250,000 barrels daily of the 650,000 barrels would be supplied by crude imports to refineries in Quebec and the Maritime Provinces.

This would leave 400,000 barrels daily to be supplied by the western Provinces, exclusive of the small settled production in Ontario. It is assumed that the Canadian outlets in Northwest United States will expand so that refineries in that area will require at least 125,000 barrels daily by 1960. There should also be some expansion in the Minnesota and Wisconsin outlets.

But despite this growth, that means that at the end of 5 years western Canada will have at least 400,000 barrels daily of crude oil over and above normal domestic demand and for the existing pipeline connections to refineries in the United States.

The accompanying map and tables were prepared to show the basic price and transportation conditions in United States and Canada which are keys to any solutions that may be adopted.

Briefly, they reveal that in future expansion, Canadian outlets must more and more compete in markets largely determined by developments in the United States and, in a broad sense, world conditions.

ILLINOIS EQUATION

When Alberta crude oil was made available at Sarnia—first by a combination of pipeline and Great Lakes shipments and later all pipeline—delivered prices had to compete with crude oil which had been available from Illinois and the midcontinent fields for over 50 years. From this competitive situation has come what is now termed the "Illinois equation."

The application of this equation in current operations, including long-term contracts, is shown in the accompanying table. In effect this means that crude-oil prices of the Alberta fields connected to the interprovincial and lakehead system must be competitive with delivered price for Illinois crude at Sarnia.

This explains why the Alberta crude schedules were reduced earlier this year and in late 1954 when posted prices for Illinois crude oil were lowered.

DISTANCE A PROBLEM

The distance from Edmonton to Sarnia along the interprovincial and lakehead systems is 1,772 miles, which is longer than any crude-oil movement by pipeline in the United States. Present deliveries require only a part of the 300,000 barrels daily capacity of the system.

The high tariff, a reflection of the distance from markets and part capacity operations, explains why prices for the Alberta crudes are around 20 cents per barrel under United States schedules for comparable crudes.

While Illinois crude oil is used as the key price for the Canadian market, crude from the midcontinent and Rocky Mountain area is a direct competitive factor in the eastern movement of western Canadian crude oil.

Crude from Oklahoma, Kansas, Colorado, Wyoming, and Texas (exclusive of the gulf coast and southwest Texas), as well as other Middle West crudes, is delivered to Middle West refineries by pipeline and inland waterways. Eastern Montana crude, through a pipeline connection to Wyoming trunklines, will also shortly be available to Middle West refineries.

Indicative of this competition a recent survey showed that sweet crude from Wyoming was being shipped to Michigan refineries at a delivered cost of $3.46. Denver-Julesburg, Colo., crude was available at the same points at $3.39 and Oklahoma crude at $3.35. To deliver Redwater crude to these points would require pipeline extensions. To the delivered Sarnia price the United States import duty of 10½ cents plus the exchange discount would be added. The same competitive situation prevails in deliveries to Chicago refineries.

UNITED STATES-CANADA COMPETITION

Market students point out that the competition of these several producing areas is a direct factor in Illinois crude prices; that posting in turn determines the delivered price of Illinois crude oil at Sarnia. This is important because it means that wherever Canadian crude oil is delivered to the Middle West markets, it will have the direct competition of one or more producing areas in this country.

With this situation in mind it has been suggested that the outlets for western Canadian crude be extended to the east to include practically all of the Canadian domestic requirements. It is known that some Government officials of Canada profess to favor such a program.

The expansion of Canadian crude output so that it now supplies over 50 percent of the total domestic market, instead of 10 percent previous to 1948, has greatly aided the Dominion's foreign exchange. It is contended that a complete independence of imported crude-oil supplies would further strengthen the exchange situation and would greatly benefit the entire Canadian economy, whose growth has been outstanding since the close of World War II.

PRICE CUT INDICATED

This would mean a new pipeline or extension of the interprovincial-lakehead system to Montreal refineries with a minimum distance of 2,300 miles from Edmonton. The distance to the refinery at Halifax would be 3,000 miles. These extensions could only be accomplished through a further lowering of western Canada's crude-oil prices to offset the increased transportation costs.

One analysis points out that serving the Montreal refineries with western Canada crude would involve a minimum pipeline transportation cost of 75 cents per barrel. The same plants are now being supplied with South American crudes with a transportation charge of around 37 cents per barrel. This involves, in the case of Montreal, a tanker shipment plus a pipeline charge from Portland, Maine.

The difference would have to be absorbed by Canadian producers should an all-domestic policy be adopted. Opponents of the all-Canadian proposal present these arguments to show that the penalty to the Canadian oil industry would far outweight any advantages that might accrue to other phases of the Nation's economy. The conclusion of most observers is that domestic-port markets should be fixed at approximately their present divisions.

SPECIAL PROBLEM SOLVED

The building of a new refinery near St. Paul and the new pipeline facilities connecting to that point are the solution to a special problem that existed in the

south Saskatchewan area where a substantial production of low-gravity, high-sulfur crude oil has been developed.

The high pipeline tariff (see table) includes a penalty charge of the interprovincial for the movement of the high-viscosity crude. It also reflects the fact that the new pipelines in Saskatchewan and Minnesota in the beginning will operate at only part of their rated capacities.

The rate of 46 cents per barrel for Redwater crude to Superior, Wis., was also recently made effective to St. Paul. It is understood that another refinery near St. Paul will be taking deliveries of Canadian crude later this year.

This development indicates that the delivered cost for Redwater crude is competitive with present pipeline and water shipments (via Mississippi River) to St. Paul from the midcontinent and Rocky Mountain fields.

Furthermore, the Minnesota pipeline connecting to the Interprovincial is 16 inches and could deliver twice as much crude oil to St. Paul as can now be handled by the two refineries in that area. This has been interpreted to point to additional refining capacity in this area or an extension of the line to other points.

PUGET SOUND AREA

The breakdown of the deliveries to the Puget Sound area of Washington is similar to that of the lakehead refineries in Wisconsin, although the pipeline mileage is substantially less.

The pipeline of the Trans Mountain Pipe Line Co. from Edmonton to the point in eastern British Columbia where the system branches off to Vancouver refineries and to the Puget Sound refineries is 24 inches. It is anticipated that the line will eventually double or triple present shipments.

Higher deliveries are expected to justify reductions in the present pipeline tariffs of 46 cents to Vancouver and 47 cents to the Puget Sound plants. These refining operations will therefore become more attractive, assuming there are no changes in the posted field prices for crude oil.

The present delivered prices for Redwater crude to Puget Sound and Vancouver refineries are competitive with crude oils from the Persian Gulf area of the Middle East, and from Venezuela and Peru. Redwater crude has an important advantage over available light-gravity crude from California.

FUTURE MARKETS

Among the producing organizations which are finding large reserves in the western Provinces are companies which have no refinery and marketing outlets in Canada. But they are major refiners and distributors in this country.

The question is, Will some of these operators find it expedient to build refineries and establish wholesale and retail facilities in Canada to secure outlets for their new crude supplies?

Analyses made of this type of expansion for producing interests indicate that the Canadian outlets would be limited and probably prove costly. The population of Canada is less than one-tenth that of the United States and the consumption per capita in the Dominion is less than two-thirds of this country.

New York State has a larger population than all Canada and its petroleum consumption is far greater. There are half a dozen States with individual oil demands closely approximating Canada's.

High transportation charges are involved in the movement of western Canada's crude supplies to eastern consuming centers. It is also true that some of the western operators, through affiliated interests, are helping to supply a part of the eastern Canada market with imports.

With these conditions prevailing it is believed that growth in western Canada's crude-oil output will not result in important new entries into Canadian refining and marketing.

UNITED STATES MARKET INDICATED

This leads to the conclusion that United States companies which develop important reserves in Canada will prefer to dispose of their production through new refineries or existing plants in the United States.

The territory extending 100 to 300 miles south of the United States-Canada boundary and as far east as Ohio is under consideration as an outlet for excess Canadian production. But no general conclusions are possible yet.

There would be direct competition from United States crude. In addition, the picture is complicated by the steady expansion of product pipelines, use of inland waterways in this country, and the presence of local crude supplies and refineries in the Northern States.

65499 O—55——12

Some studies have indicated that the most economic expansion will be in the large markets of the Chicago and Detroit areas and important inland consuming centers in Michigan, Minnesota, and Wisconsin.

UNITED STATES-CANADIAN POLICY

The solution to the market problem is inevitably tied up with future United States-Canadian governmental policies. And some contend the Canadian producers should receive special consideration in the matter of oil-import duties to this country. This argument has many angles.

First there is national defense. Canadian imports would not be terminated in the case of another world war and could quickly be integrated as an essential part of a common defense program.

This also ties in with studies being made of the future oil requirements of this country. These reveal that domestic demands, exclusive of a national emergency, can be fulfilled only by addition of more than 90 billion barrels of new reserves in this country over the next 20 years.

This is more domestic oil than has been discovered since the Drake well 95 years ago. It assumes continuation of the present ratio between domestic production and imports from other countries, exclusive of Canada.

UNITED STATES NEEDS CANADA

Some observers say that it will not be possible to find reserves of that magnitude, without including the expected major discoveries in Canada. They feel that demands and supplies should be considered on a continental basis. Preference would be given to Canadian oil imports in this country over those coming from distant points in other continents.

Other United States-Canadian conditions are cited in support of this type of program. The economies of the two countries overlap in many respects. This country is largely dependent on Canada for important raw materials. Canada is also the largest customer of the United States.

There are officials at Ottawa and Washington who feel that this interdependence should be fostered and expanded in the interests of both countries. They advocate whatever oil-policy changes may appear necessary to promote this relationship.

(Cost factors in oil figures follow:)

Cost factors in oil delivery from Canada

	Per barrel
ILLINOIS CRUDE	
To Sarnia:	
Posted price (36° gravity)	$2.90
Gathering charge	.10
Pipeline allowance	.0303
Pipeline tariff	.2608
Delivered cost at Sarnia (United States funds)	3.2911
Discount on United States funds (1⅝ percent)	.0535
REDWATER, ALBERTA, CRUDE	
Field price	2.49
Gathering allowance and charge	.0525
Pipeline allowance	.0257
Pipeline tariff	.66
Marketing charge	.01
Delivered cost at Sarnia (Canadian funds)	3.2382
Discount on United States funds (1⅝ percent)	.0526
To Minnesota, Wisconsin:	
Fosterton (Saskatchewan) crude to Pine Bend (St. Paul)	1.29
Field price (23° gravity)	.10
Gathering charge	.77
Pipeline tariff	.013
Tender deduction	2.173
Delivered cost (Canadian funds)	2.173
Discount on United States funds (1⅝ percent)	.0351
United States import duty (under 24° gravity)	.0525
Total	2.2606

To Superior and St. Paul:	
Field price	2.49
Gathering allowance and charge	.0525
Pipeline allowance	.0257
Pipeline tariff	.46
Total (Canadian funds)	3.0282
Discount on United States funds	.0493
United States import duty	.1050
Total (United States funds)	3.1825
To Puget Sound, Wash.:	
Field price	2.49
Gathering allowance and charge	.0525
Pipeline allowance	.0257
Pipeline tariff	.47
Marketing charge	.01
Total (Canadian funds)	3.0482
Import duty	.105
Discount on United States funds (1⅝ percent)	.0495
Delivered cost	3.2027

Mr. COURTNEY. Now you have corrections in the record itself, Mr. Kirk?

Mr. KIRK. None other than the one I gave you, that were just stenographic or reporting technical errors, I believe.

Mr. COURTNEY. Well, don't you have a proposed addition to one portion of the record?

Mr. KIRK. Oh, I thought that that was to be accepted the way it was written.

You want me to also give that?

Mr. COURTNEY. Well, Mr. Chairman, since the record has been examined.

Mr. KIRK. I can tell you what it is, if you would like to have me.

Mr. COURTNEY. Yes.

Mr. KIRK. It was a statement in Mr. R. L. Minckler's statement, that was in the Western Oil and Gas statement, in which he outlined the various facilities that had been built or programed since World War II to bring extra supplies of oil and natural gas to the west coast, including pipelines, crude lines, products lines, and gas lines, and refineries.

What we wanted to add there—it seemed to be a point of interest and we looked it up—that the announced value of all those facilities that had been added by private capital came to $1,353,000,000.

We ask to put that in the record to add to this Minckler statement.

Mr. COURTNEY. That would be supplementary information, which was not contained in Mr. Minckler's formal statement but which has been researched in the interval.

Mr. KIRK. That is right.

Mr. HÉBERT. Well, the statement of the witness will stand on that. That is sufficient. Do you have the document to support it?

Mr. KIRK. You have the document.

Mr. COURTNEY. Yes.

Mr. HÉBERT. Without objection, that will be made a part of the record.

(The document is as follows:)

GENERAL PETROLEUM CORP.,
Los Angeles, Calif., July 20, 1955.

Mr. JOHN J. COURTNEY,
Special Counsel, Committee on Armed Services,
House of Representatives, Washington, D. C.

DEAR MR. COURTNEY: On July 11, 1955, I appeared before your committee in Los Angeles relative to the west coast oil pipeline matter. I have read the stenographic transcript of my testimony at this hearing and request that the following correction and additions be made in the record as it now stands:

Page 816, line 35, reads "area for $2 a gallon." Change so as to read: "area for 2 cents a gallon."

Page 806, line 43, reads "money and effort in the performance of our public duty." Change to read: "money and effort in the performance of our public duty. All of these new facilities which are not operating, building, or programed to bring added supplies of oil and natural gas to the west coast have been, or will be, built with private capital, at an announced cost of approximately $1,353,000,000."

Very truly yours,

R. I. MINCKLER, *President.*

Mr. COURTNEY. Mr. Chairman, that is all for the moment.

In the interval of the committee recess, Mr. Chairman, and in response to the directions of the subcommittee, Dr. Flemming has prepared an expurgated edition of his text, which has been disseminated to the press and other interested individuals.

And I would ask that it now be included as a part of the record as his formal presentation.

Mr. HÉBERT. That statement is in accordance with the request of the committee that he prepare such a statement?

Mr. COURTNEY. It is in response to the request of the subcommittee.

Mr. HÉBERT. Without objection, it will be made part of the record at this point.

(The document is as follows:)

SUMMARY OF UNCLASSIFIED TESTIMONY OF ARTHUR S. FLEMING, DIRECTOR, OFFICE OF DEFENSE MOBILIZATION BEFORE SUBCOMMITTEE FOR SPECIAL INVESTIGATIONS, HOUSE ARMED SERVICES COMMITTEE, IN EXECUTIVE SESSION, JULY 7, 1955

SUPPLY OF TEXAS CRUDE TO CALIFORNIA

On April 28, 1952, a certificate of necessity was issued to the West Coast Pipeline Co., 1403 Mercantile Bank Building, Dallas, Tex., permitting accelerated tax amortization of 25 percent of the estimated cost ($68,018,000) of a pipeline, 984 miles in length, from Wink, Tex., to Norwalk (Los Angeles Basin), Calif.

By subsequent amendments the certificate was changed to cover a 1,030-mile pipeline from Midland, Tex., to Norwalk, Calif., for an estimated cost of $106,500,000 and a capacity of 300,000 barrels per day.

On December 8, 1953, the company applied to the Reconstruction Finance Corporation for a Government guaranty under section 302 of the Defense Production Act of an $85 million loan. Reconstruction Finance Corporation, in turn, referred the application to the Office of Defense Mobilization for a determination of defense essentiality.

The company stated that $21,500,000 (of the $106,500,000 estimated cost) is to be raised from equity investors. Its engineers have concluded that an average daily throughput of 75,000 barrels at a 60-cent tariff will constitute a break-even point. The Government as the guaranteeing agency is asked to make up any deficiency between the average daily throughput and 75,000 barrels per day.

On December 21, 1953, this application was referred by the Office of Defense Mobilization to the Department of the Interior for review and recommendation. On April 12, 1954, that Department recommended that the pipeline should be financed by private capital without a Government guaranty.

In support of that conclusion it stated:

"Although the Department of Defense, upon request, concluded that a crude-oil pipeline from west Texas to California would contribute to the national security and would have strategic and logistic significance in time of war, it failed to find that such a line at this time is sufficiently compelling to recommend the issuance of the 'certificate of essentiality.'

"Data available to the Petroleum Administration for Defense indiciate that west coast refining capacity and crude-oil productive capacity are essentially in balance. This balance does not include crude oil which can be made available from the recently completed Trans-Mountain Pipe Line but does include the productive capacity of the Elk Hills Naval Petroleum Reserve. Also, from a petroleum logistic standpoint, recently completed products pipelines to the Pacific Northwest make products from the Rocky Mountain area available on the west coast."

On April 2, 1954, the Department of Defense advised the Office of Defense Mobilization that, although the line would contribute to national security and would have strategic and logistic significance in time of war (as indicated by the issuance of a necessity certificate), it did not justify Government financing.

The conclusion had as its basis a study of the petroleum supply-demand on the west coast, prepared by the Petroleum Logistics Division Staff, of Secretary Thomas' office.

The application for a Government guaranty of $85 million is still pending.

In October 1954 I asked a committee of three businessmen to study the problem of oil supply to the west coast needed to meet anticipated wartime requirements. The committee consisted of Dr. Charles A. Thomas, president of Monsanto Chemical Co., as chairman of the committee; Mr. Charles S. Cheston, of Philadelphia, a director of various industrial organizations; and Mr. Palmer Hoyt, editor of the Denver Post. The committee, after a series of meetings, during which reports from the Departments of Defense and Interior were reviewed, reported to me on November 30, 1954, that the members saw no compelling justification for the Government to underwrite a petroleum pipeline to the west coast.

However, the committee stated in its report that a new petroleum supply and demand study was then underway which might affect this conclusion.

The new supply and demand study was completed early in May 1955 by the Military Petroleum Advisory Board. In general this study disclosed that, after taking into consideration consumer rationing, and estimated refinery damage, district III (which includes Texas) is scheduled to supply some petroleum products during a war period to the States of California, Oregon, Washington, Arizona, and Nevada, constituting district V.

Of the petroleum products required from district III, 25 percent would move to widely dispersed points, mainly in Arizona, not reached by the proposed pipeline. A new pipeline, now being built by the Southern Pacific Co., can be counted on to carry another 40 percent.

Basic data and the relationship between crude oil supply and refined product requirements in district V were developed in the study completed in May 1955 by the Military Petroleum Advisory Board.

That study shows:

1. In 1954 district V demands were supplied:
   - (*a*) 92 percent from California
   - (*b*) 4 percent imports from the Middle East, Latin America and Canada
   - (*c*) 4 percent refined products from district IV (Rocky Mountain area).
2. In the peak war period the demand is to be supplied:
   - (*a*) Largely from California
   - (*b*) Most of the balance from Canada
   - (*c*) A small quantity of refined products from district IV
   - (*d*) A smaller quantity of refined products from district III.

THE TRANS-MOUNTAIN PIPE LINE

Currently transporting about 70,000 barrels a day of crude oil from the Alberta fields in Canada to its terminus at Vancouver, British Columbia (with a spur line across the border to Ferndale, Wash.), the Trans-Mountain Pipe Line began operations in October 1953. With western Canadian refineries requiring 47,000 barrels a day of crude at operating capacity, delivery to United States refineries

on the west coast could be increased to 103,000 barrels a day with current pumping facilities, and to a maximum of 253,000 barrels a day by installing additional pumping stations on the existing line.

The Trans-Mountain Pipe Line was privately financed, involving no Government outlays or guaranties. Ownership of its 1.5 million shares is distributed as follows: (1) 800,000 shares divided equally among 7 major companies, 6 of which are United States companies or their Canadian subsidiaries, (2) 250,000 shares owned by a group of 14 Alberta oil-producing companies, and (3) 450,000 shares held by the public.

The rapidly expanding output and reserves of the Alberta oilfields assume an ample supply through the Trans-Mountain line to the northern part of district V in time of war. Latest estimates place Alberta reserves at 2.4 billion barrels of crude, with current maximum efficient rate of production potential between 600,000 and 800,000 barrels a day and still increasing.

The maximum potential Canadian use of its Alberta crude in the foreseeable future, either in its own inland refineries or for transmission eastward through the Interprovincial Pipeline, would take less than half of the current Alberta output at maximum efficient rate. This would leave more than enough for capacity movement through the Trans-Mountain Pipe Line to the Pacific coast.

From the foregoing it is now possible to summarize the arguments for and against a pipeline from west Texas to the west coast.

(*a*) *Crude oil*

1. *Pro.*—The fact that during 1954 about 50,000 barrels a day of crude oil was imported into district V (along with minor quantities of natural gasoline from the gulf coast) when district V refineries were operating far below capacity, suggests that California is not producing enough crude oil to meet its peacetime domestic needs. As all-out war would add materially to district V crude-oil needs, substantial quantities of crude oil originating outside district V would be required and for this purpose west Texas crude is the nearest, quickest, most adequate, and safest source of supply.

Con.—(*a*) During 1954 California crude-oil production averaged 976,000 barrels a day, including 22,000 barrels a day from Elk Hills Naval Reserve. This level of California crude output is not indicative of inadequacy to meet peacetime domestic needs. District V refineries operated at only 76.3 percent of rated capacity during 1954, not because of inadequate crude, but because of weak market demand relative to growing refinery capacity. The slight (2.4 percent) reduction in district V (California) crude-oil output between 1953 and 1954 likewise reflects reduced market and refinery demand and no declining crude production capacity. Hence, there was no need to step up California crude production to its 1953 rate or to its maximum efficient rate crude availability of approximately 1,100,000 barrels a day.

(*b*) Crude-oil imports of 50,000 barrels a day in 1954 do not reflect district V crude-oil inadequacy, but rather availability at competitive prices of foreign crude imported primarily by large west coast oil refiners and marketers. Natural gasoline receipts from the gulf coast during 1954 varied widely from month to month, but for the year as a whole averaged only 6,838 barrels a day.

(*c*) While it is claimed that west Texas crude is the nearest, quickest, most adequate, and safest source of crude for California refineries, it does not meet these tests with respect to the Pacific Northwest market area in district V. This is a deficit producing area with respect to petroleum product needs. Canadian crude, available through the Trans-Mountain Pipeline, is closer, fully as adequate, and not as vulnerable as west Texas crude, which would have to be transported north by tanker after reaching the west coast in the Los Angeles area. Canadian crude imports from the prolific Alberta oilfields are available to district V up to 103,000 barrels a day with present pumping facilities, and up to 253,000 barrels a day by adding more pumping stations to the existing Trans-Mountain Pipeline.

2. *Pro.*—During World War II there is indication that California suffered from a crude-oil shortage. In the 1944–46 period excess Texas crudes were used to supplement California crude production by as much as 36,000 barrels a day, requiring a sizable railroad tank-car movement of such crude to California refineries. During the Korean emergency there were shortages of both crude oil and products on the west coast—requiring military purchases of approximately 50,000 barrels a day of its west coast requirements at gulf coast and Caribbean ports.

Con.—The current situation as to California crude production capability is different from that which prevailed during the peak wartime demand period late in World War II and the immediate postwar years. Under the stimulus of extreme military needs, California crude production reached 894,471 barrels a day in 1945, and crude-oil reserves totaled 3,410 million barrels or 10.4 years at the then current production rates. Since that time new drilling discoveries have increased crude reserves by 14 percent to a total of 3,888,588,000 barrels (10.9 years) and would be able to support a higher production level than that of World War II or 1954.

(*b*) *Refined products*

1. *Pro.*—There were refined product shortages on the west coast during and immediately following World War II and more recently in the Korean emergency. Refined product shipments during World War II, moved by tank car, reached as high as 150,000 barrels a day. And since petroleum product requirements to meet military and civilian needs in district V in any future emergency may greatly exceed current demand, products originating outside of district V will have to be moved to the west coast. During wartime the most reliable, safest, and least expensive method of such needed transportation is by a pipeline from west Texas.

(*a*) Because of a sharp increase of approximately 40 percent in refinery capacity in district V from World War II to date (more particularly during the past 5 years), it is not anticipated that any protracted refined product deficiency will be repeated in district V during an emergency. Refinery capacity rose from an estimated 965,000 barrels a day average during World War II to 1,354,900 barrels a day as of January 1, 1955.

(*b*) In addition, the recently announced Southern Pacific Railroad products line running west from El Paso and east from Los Angeles to the Phoenix-Tucson market areas is expected to be available before the end of 1955. It has been estimated that under emergency war conditions it could move 48,000 barrels a day of refined products between El Paso and the west coast.

SUMMARY

Crude

Crude production capacity in California, appreciably increased since World War II, will substantially meet California refinery requirements at maximum operating capacity in wartime. A product line from El Paso to Los Angeles, to be completed in 1955, can be used in an emergency to bring Texas crude to the west coast, if available Canadian crude cannot be moved to California refineries by coastwise tankers.

All crude requirements of the Pacific Northwest refineries can be met from Canada by an existing pipeline.

Refined products

Total wartime district V requirements for refined products can be supplied by district V refineries plus normal receipts from outside districts in most periods of a war.

To meet a temporary shortage in district V of refined products a part could be moved from Texas by the Southern Pacific pipeline and the balance for rail movement is too small in relation to total requirements to warrant Government commitments or expenditures in support of a pipeline.

Mr. COURTNEY. Now, likewise, we have a transmittal from the Department of the Interior, Mr. H. A. Stewart, Director of the Oil and Gas Division, responding to a similar inquiry.

Mr. Chairman, I would ask that that be made a part of the record.

Mr. HÉBERT. That also was in response to the request of the committee?

Mr. COURTNEY. It is in response to the committee's request. It is the expurgated edition, which can be released for public use.

(The transmittal follows:)

SUMMARY OF UNCLASSIFIED TESTIMONY OF H. A. STEWART, DIRECTOR, OFFICE OF GAS AND OIL, DEPARTMENT OF THE INTERIOR, BEFORE SUBCOMMITTEE FOR SPECIAL INVESTIGATIONS, HOUSE ARMED SERVICES COMMITTEE, IN EXECUTIVE SESSION, JULY 8, 1955

DISTRICT V—CRUDE-OIL SUPPLIES, DEMAND, RESERVES

The figures indicate a marked increase in crude oil production during World War II, followed in 1946 by a very slight decline and a return thereafter to record rates of output. Gains since 1948 have been very small but an all-time peak of 1 million barrels per day was reached in 1953. Production rates in recent years have roughly followed trends in proved reserves of crude oil as reported by the American Petroleum Institute but are materially higher relative to such reserves than they were prior to World War II.

Crude-oil runs to stills have progressively increased in recent years at a higher rate of gain than has crude production. Imports of crude oils since 1950 have increased, coming mostly from Indonesia and the Middle East until the current year. Beginning in late 1954 imports of Canadian crude have been growing to supply new refining capacity in the strategic Northwest area. This oil comes

District V [1]—Crude oil supply and demand

[1,000 barrels per day]

	Production	Imports [2]	From other United States	Total crude supply	Crude runs	Exports	Direct use and loss	Transfers to products	Total crude demand	Stock change
1940	613	.....	1	614	549	52	13	3	617	−3
1941	631	.....	2	633	568	[3] 27	16	27	638	−5
1942	680	.....	4	684	631	17	30	12	690	−6
1943	779	.....	5	784	723	17	18	37	795	−11
1944	852	.....	4	856	805	14	14	52	885	−29
1945	894	.....	18	912	859	11	21	29	920	−8
1946	862	.....	4	866	781	14	2	56	853	+13
1947	912	.....	4	916	826	17	3	64	910	+6
1948	929	.....	3	932	895	19	2	6	922	+10
1949	912	3	6	921	879	18	7	5	909	+12
1950	898	.....	4	902	880	21	14	5	920	−18
1951	971	10	4	985	956	23	5	5	989	−4
1952	982	32	9	1,023	989	18	3	6	1,016	+7
1953	1,000	78	6	1,084	1,046	16	3	6	1,071	+13
1954	975	51	.....	1,026	1,020	5	1	6	1,032	−6
1955 (January-April)	968	74	.....	1,042	1,031	3	1	5	1,040	+2

[1] Includes California, Arizona, Nevada, Washington, and Oregon.
[2] See following table:

CRUDE IMPORTS BY SOURCE

[1,000 barrels per day]

	1949	1951	1952	1953	1954	January-April 1955
Canada	.....	.....	.....	.....	2	21
Middle East	.....	.....	12	35	9	10
Venezuela	3	.....	5	5	1	11
Borneo	.....	10	5	.....	.....	.....
Indonesia	.....	.....	10	38	36	28
Other	.....	.....	.....	.....	3	4
Total	3	10	32	78	51	74

[3] Estimate based on 9 months' data.

Proved oil reserves

[1,000 barrels]

Year end	Crude oil	Natural gas liquids	Total liquid hydrocarbons
California: [1]			
1940	[2] 3,532,000	([3])	([3])
1942	[2] 3,323,000	([3])	([3])
1943	[2] 3,196,000	([3])	([3])
1944	[2] 3,337,000	([3])	([3])
1945	[2] 3,409,948	([3])	([3])
1946	3,293,491	308,372	3,601,863
1950	3,733,562	363,387	4,096,949
1953	3,919,379	324,866	4,244,245
1954	3,888,588	330,249	4,218,837
Canada: [4]			
1953	1,845,422	198,126	2,043,548
1954	2,207,614	208,331	2,415,945

[1] Source: American Petroleum Institute.
[2] Includes cycle plant and lease condensate.
[3] Not available.
[4] Source: Canadian Petroleum Association.

from large, recently developed reserves in Alberta, by the Transmountain Pipeline. The flow promises to increase as refining capacity is expanded in Washington and perhaps Oregon.

This situation emphasizes the growth in crude oil available to the Pacific coastal region since World War II involving primarily three elements:

1. Small gains in availability from California commercial fields;
2. An increase in the potential productive capacity in the Elk Hills Naval Reserve through an extensive development program;
3. Completion of the Transmountain Pipeline of 24-inch diameter whose purpose is to move to markets a portion of the very large and growing crude oil supply that has been developed in Western Canada since 1947.

The modest export of crude oil from California has for many years been related primarily to supplies for processing in British Columbia, and to a lesser degree, Japan. Refineries in these areas are being supplied or will be supplied with crude from western Canada and Eastern Hemisphere sources respectively. Hence, exports are expected to be insignificant in future.

Average daily production of crude oil in Canada in 1954 reached a new high of 263,200 barrels daily, some 150,000 barrels below the daily potential of producing fields at the end of the year. The rapidly growing total potential capacity therefore exceeded 400,000 barrels daily at the beginning of the current year.

Source: A Survey of the Petroleum Industry in Canada During 1954, by R. B. Toombs.

Commercial shipments of petroleum products to other areas from district V

[1,000 barrels daily]

	To—			Total		To—			Total
	Exports [1]	District I	Other			Exports [1]	District I	Other	
1940	91	17	2	110	1948	71	6	12	89
1941	75	8	------	83	1949	62	21	9	92
1942	46	------	------	46	1950	77	64	10	151
1943	36	------	------	36	1951	118	2	9	129
1944	31	------	------	31	1952	102	2	8	112
1945	35	1	------	36	1953	112	2	7	121
1946	65	2	11	78	1954	107	7	7	121
1947	84	3	12	99	January–April 1955	128	25	12	165

[1] Exports on Bureau of Mines basis; includes shipments to Alaska and Hawaii.

Source: Bureau of Mines.

The above table shows that shipments of petroleum products (exclusive of military) have exceeded 100,000 barrels per day in each year since 1949 and currently exceed prewar rates. The bulk of these shipments go to foreign desti-

nations, to Alaska and Hawaii, and under favorable market conditions, to the east coast of the United States. It will be noted that in the first 4 months of this year shipments to the east coast have increased materially in reflection of surplus supplies of heavy fuel oil in California and firm market conditions on the east coast.

On an all-oils basis, district V is still a net exporter of petroleum.

Refinery capacity to process crude oil, District V

[1,000 barrels daily]

	California	Other States	Total		California	Other States	Total
Jan. 1, 1940	936	2	938	Jan. 1, 1948	1,094	9	1,103
Jan. 1, 1941	949	3	952	Jan. 1, 1949	1,096	10	1,106
Jan. 1, 1942	918	4	922	Jan. 1, 1950	1,129	10	1,139
Jan. 1, 1943	930	5	935	Jan. 1, 1951	1,165	11	1,176
Jan. 1, 1944	900	5	905	Jan. 1, 1952	1,147	15	1,162
Jan. 1, 1945	961	6	967	Jan. 1, 1953	1,211	15	1,226
Jan. 1, 1946	928	6	934	Jan. 1, 1954	1,232	11	1,243
Jan. 1, 1947	990	10	1,000	Jan. 1, 1955	1,250	[1] 46	1,296

[1] Includes General Petroleum Corp. plant at Ferndale, Wash., 35,000 barrels daily completed October 1954, but excludes Shell plant at Anacortes, Wash., 50,000 barrels daily to be completed in 1955.

The capacity of California refineries has grown little in recent years as emphasis has been placed upon the construction of new facilities to increase yields of lighter products and to improve quality. Significant new capacity is being added, however, in the State of Washington.

California natural gas

[Million cubic feet per day]

	California marketed production	Interdistrict receipts by pipeline	Total supply	Residual fuel oil equivalent of interdistrict receipts in barrels per day
1940	962		962	
1941	1,027		1,027	
1942	1,107		1,107	
1943	1,254		1,254	
1944	1,372		1,372	
1945	1,377		1,377	
1946	1,338		1,338	
1947	1,536	10	1,546	163
1948	1,560	179	1,739	3,056
1949	1,509	258	1,767	43,982
1950	1,530	406	1,936	69,194
1951	1,553	668	2,221	113,928
1952	1,414	813	2,227	138,752
1953	1,456	978	2,434	166,912
1954 [1]	1,422	1,282	2,704	218,783

[1] Preliminary.

NOTE.—The rapid growth in natural gas receipts beginning in 1947 reflects the pipeline expansions accomplished by El Paso Natural Gas Co. that delivers the gas to California distributing companies at the State boundary. The 3 major steps taken to make gas available to California from other sources were:

1947: Deliveries began from Permian Basin (west Texas and southeast New Mexico) fields through a 26 inch pipeline at Blythe for distribution in the Los Angeles area.

1950: Deliveries began from Permian Basin fields through a 30-inch pipeline at Topock for distribution in the San Francisco area.

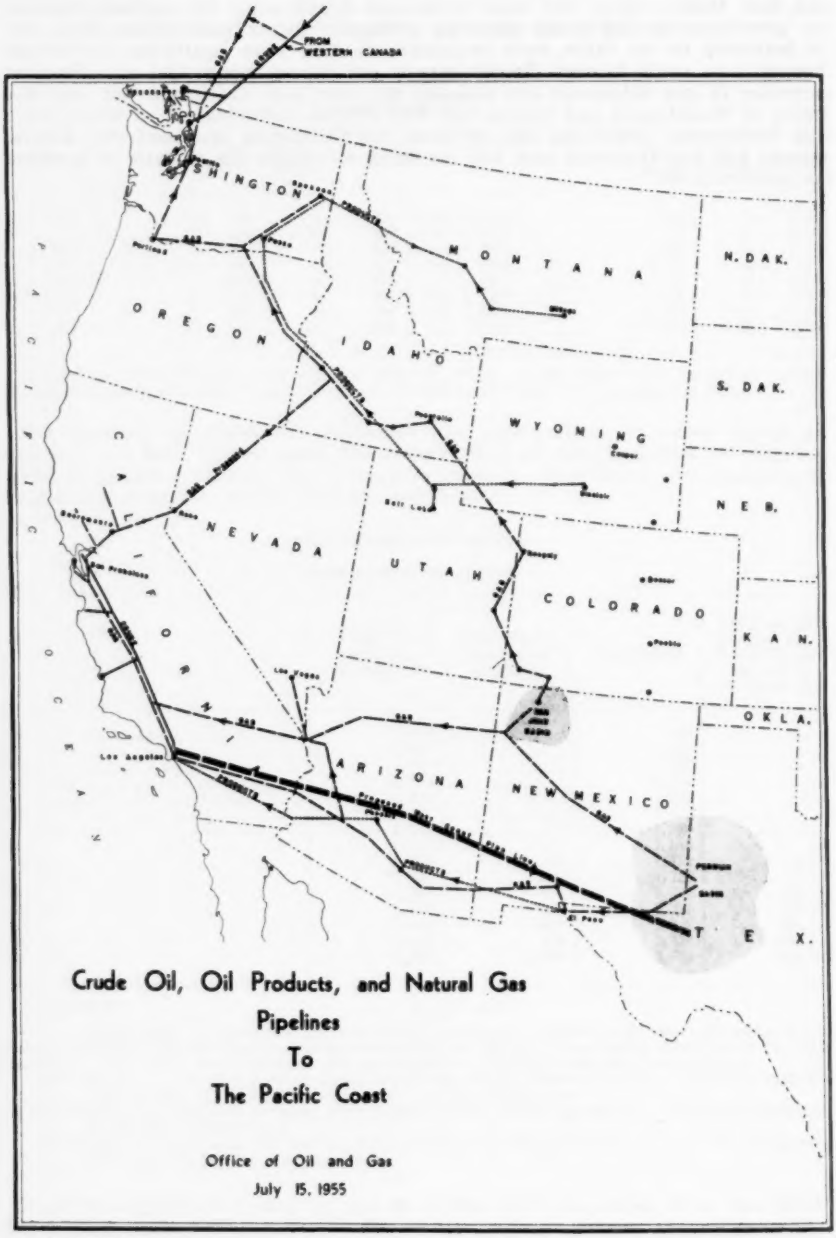
1951: Deliveries began from San Juan Basin (northwest New Mexico) fields through a 24-inch pipeline at Topock for the San Francisco area.

Pipeline capacities to deliver gas at Blythe have increased from an initial 305 million cubic feet per day to 850 million, and at Topock from 250 million cubic feet per day to 587 million.

Plans have been announced for a further increase in capacity to deliver gas at these two points on the Colorado River to a total exceeding 1,600 million cubic feet per day. An additional 250 million cubic feet daily for northern California consumers is to be taken by a new connecting line from the Pacific Northwest

Pipeline (presently under construction) and 300 million cubic feet daily is planned for importation into Washington and Oregon from western Canada sources.

The rapidly increasing shipments of national gas into California from Texas and New Mexico since 1947 have influenced significantly the onshore demand for petroleum in California affecting primarily heavy and lighter fuel oils. As indicated in the table, such shipments in 1954 were equivalent in British thermal unit value to over 218,000 barrels per day of heavy fuel oil. Further increases in gas shipments are planned not only into California but into the States of Washington and Oregon and into British Columbia, all of which have been historically important market areas for California produced oil. Hence, natural gas has inhibited and will continue to inhibit the growth of markets for California oil.


FROM WESTERN CANADA
WASHINGTON
OREGON
IDAHO
MONTANA
N. DAK.
S. DAK.
WYOMING
NEB.
NEVADA
UTAH
COLORADO
KAN.
OKLA.
ARIZONA
NEW MEXICO
TEX.
Crude Oil, Oil Products, and Natural Gas
Pipelines
To
The Pacific Coast
Office of Oil and Gas
July 15, 1955
UNITED STATES
DEPARTMENT OF THE INTERIOR
WASHINGTON D C

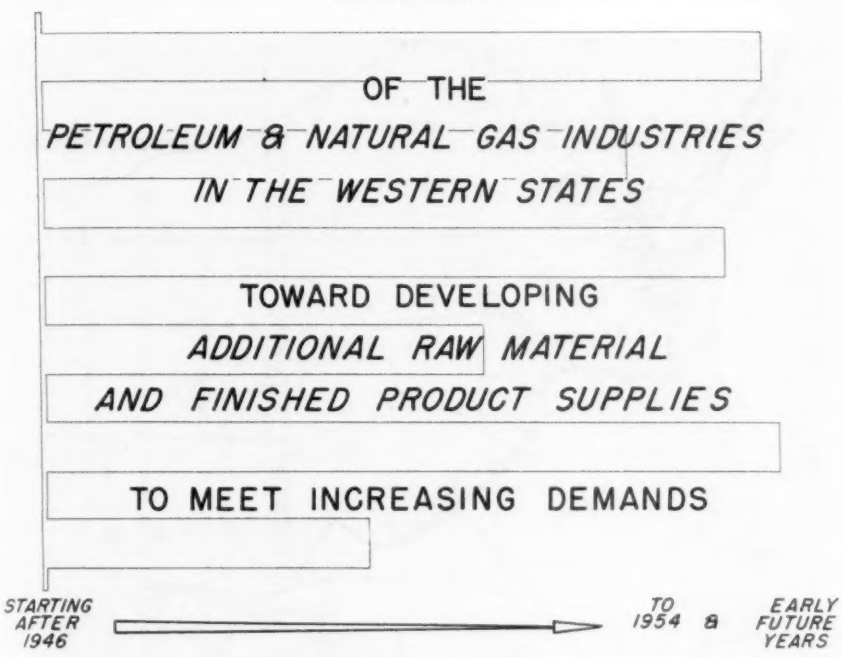
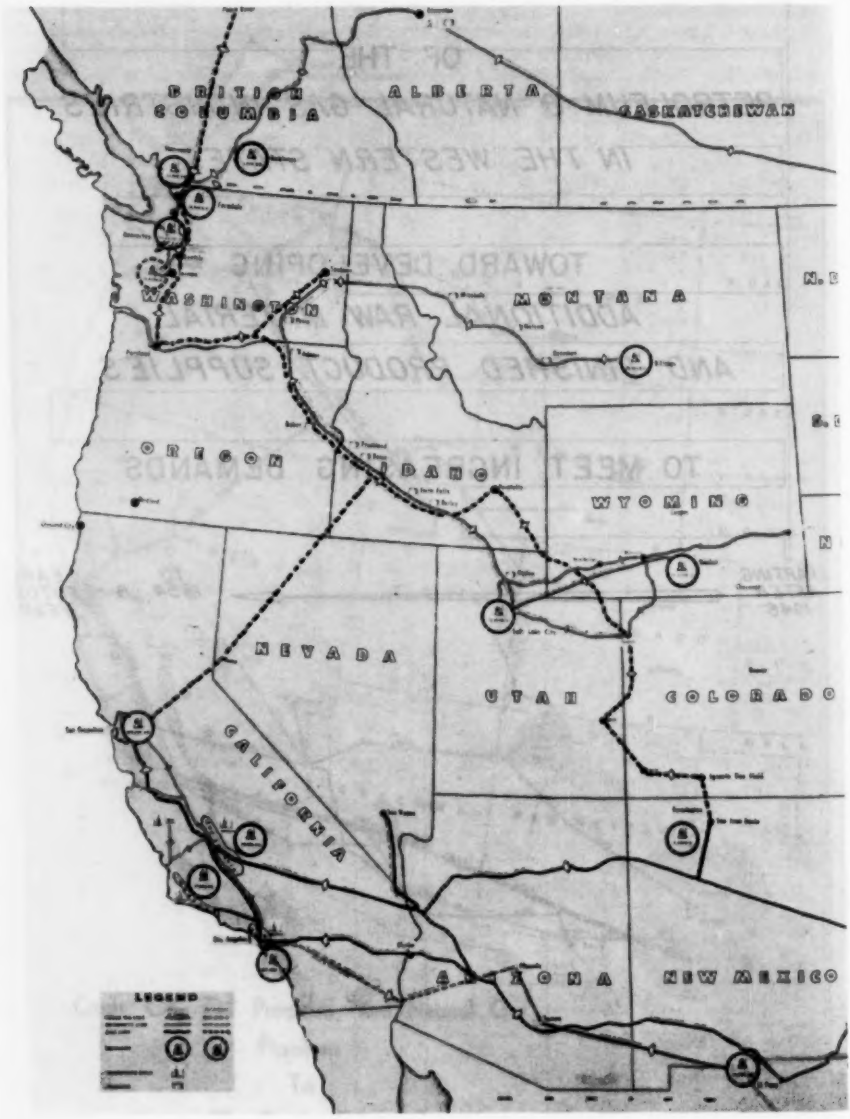

PROGRESS
OF THE
PETROLEUM & NATURAL GAS INDUSTRIES
IN THE WESTERN STATES
TOWARD DEVELOPING
ADDITIONAL RAW MATERIAL
AND FINISHED PRODUCT SUPPLIES
TO MEET INCREASING DEMANDS
STARTING AFTER 1946
TO 1954 & EARLY FUTURE YEARS

EXHIBIT 1


BRITISH COLUMBIA
ALBERTA
SASKATCHEWAN
WASHINGTON
MONTANA
OREGON
IDAHO
WYOMING
NEVADA
UTAH
COLORADO
CALIFORNIA
ARIZONA
NEW MEXICO
LEGEND

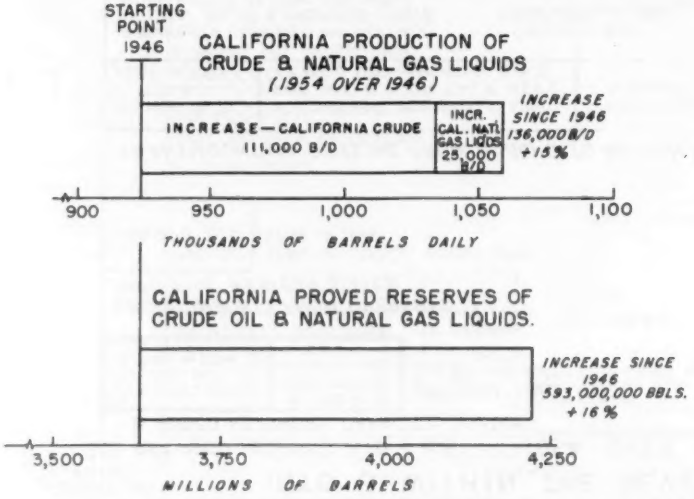
II

NUMEROUS DEVELOPMENTS HAVE OCCURRED SINCE WORLD WAR II WHICH HAVE RESULTED IN LARGE INCREASES IN THE SUPPLIES OF PETROLEUM RAW MATERIALS AND PRODUCTS AVAILABLE TO MEET INCREASING DEMAND IN THE WESTERN STATES, AND THESE DEVELOPMENTS CONTINUE. THE INCREASES IN THE SOURCES OF SUPPLY, EITHER ACTUAL OR POTENTIAL, ARE DEMONSTRATED BY THIS SERIES OF CHARTS IN TERMS OF THE INCREMENTAL GROWTH SINCE 1946.

IT WAS IN 1944 AND 1945 THAT PROPOSALS FOR A CRUDE OIL PIPE LINE FROM TEXAS TO SOUTHERN CALIFORNIA WERE SERIOUSLY INITIATED.

SHOWN FIRST, IN THE CHART BELOW, ARE THE SIZEABLE INCREASES WHICH HAVE TAKEN PLACE SIMULTANEOUSLY IN THE INDIGENEOUS PRODUCTION AND PROVED RESERVES OF CRUDE OIL AND NATURAL GAS LIQUIDS.

INCREASE IN PRODUCTION & RESERVES OF CALIFORNIA CRUDE OIL SINCE 1946



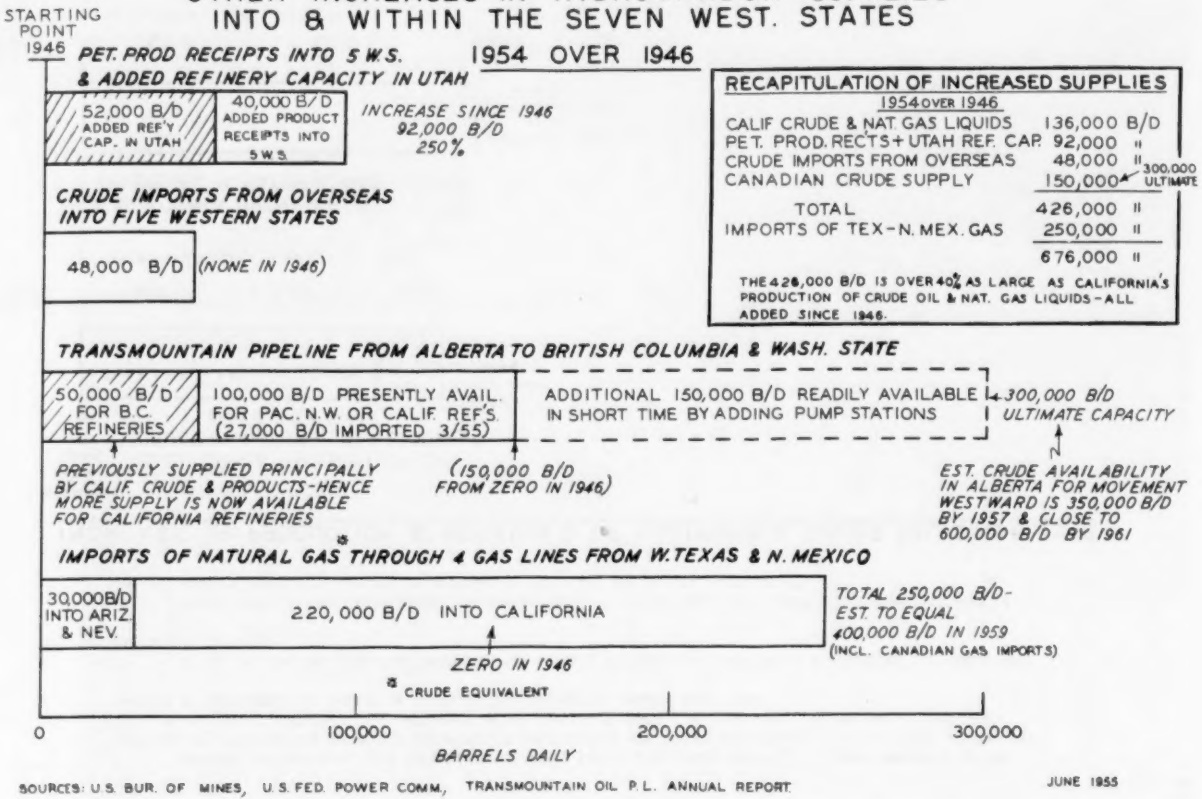
SOURCE: U.S. BUR. OF MINES AND A.P.I. RESERVES COMMITTEE

JUNE, 1955

EXHIBIT 3

III

OTHER INCREASES IN HYDROCARBON SUPPLIES INTO & WITHIN THE SEVEN WEST. STATES


STARTING POINT 1946
PET. PROD RECEIPTS INTO 5 W.S. & ADDED REFINERY CAPACITY IN UTAH
1954 OVER 1946
52,000 B/D ADDED REF'Y CAP. IN UTAH
40,000 B/D ADDED PRODUCT RECEIPTS INTO 5 W.S.
INCREASE SINCE 1946
92,000 B/D
250%
RECAPITULATION OF INCREASED SUPPLIES
1954 over 1946
CALIF CRUDE & NAT GAS LIQUIDS 136,000 B/D
PET. PROD. RECTS + UTAH REF. CAP. 92,000 "
CRUDE IMPORTS FROM OVERSEAS 48,000 "
CANADIAN CRUDE SUPPLY 150,000 (300,000 ULTIMATE)
TOTAL 426,000 "
IMPORTS OF TEX-N. MEX. GAS 250,000 "
676,000 "
THE 426,000 B/D IS OVER 40% AS LARGE AS CALIFORNIA'S PRODUCTION OF CRUDE OIL & NAT. GAS LIQUIDS - ALL ADDED SINCE 1946.
CRUDE IMPORTS FROM OVERSEAS INTO FIVE WESTERN STATES
48,000 B/D (NONE IN 1946)
TRANSMOUNTAIN PIPELINE FROM ALBERTA TO BRITISH COLUMBIA & WASH. STATE
50,000 B/D FOR B.C. REFINERIES
100,000 B/D PRESENTLY AVAIL. FOR PAC. N.W. OR CALIF REF'S. (27,000 B/D IMPORTED 3/55)
ADDITIONAL 150,000 B/D READILY AVAILABLE IN SHORT TIME BY ADDING PUMP STATIONS
300,000 B/D ULTIMATE CAPACITY
PREVIOUSLY SUPPLIED PRINCIPALLY BY CALIF CRUDE & PRODUCTS - HENCE MORE SUPPLY IS NOW AVAILABLE FOR CALIFORNIA REFINERIES
(150,000 B/D FROM ZERO IN 1946)
EST. CRUDE AVAILABILITY IN ALBERTA FOR MOVEMENT WESTWARD IS 350,000 B/D BY 1957 & CLOSE TO 600,000 B/D BY 1961
IMPORTS OF NATURAL GAS THROUGH 4 GAS LINES FROM W. TEXAS & N. MEXICO
30,000 B/D INTO ARIZ. & NEV.
220,000 B/D INTO CALIFORNIA
TOTAL 250,000 B/D - EST. TO EQUAL 400,000 B/D IN 1959 (INCL. CANADIAN GAS IMPORTS)
ZERO IN 1946
* CRUDE EQUIVALENT
0
100,000
200,000
300,000
BARRELS DAILY

SOURCES: U.S. BUR. OF MINES, U.S. FED. POWER COMM., TRANSMOUNTAIN OIL P.L. ANNUAL REPORT.

JUNE 1955

AMPLIFICATION OF PIPELINE TRANSPORTATION

IV

SOURCES: U.S. BUR. OF MINES, U.S. FED. POWER COMM., TRANSMOUNTAIN OIL P.L. ANNUAL REPORT

JUNE 1955

EXHIBIT 4

65499 O—55—13

AMPLIFICATION OF PIPELINE TRANSPORTATION INTO & WITHIN THE SEVEN WESTERN STATES

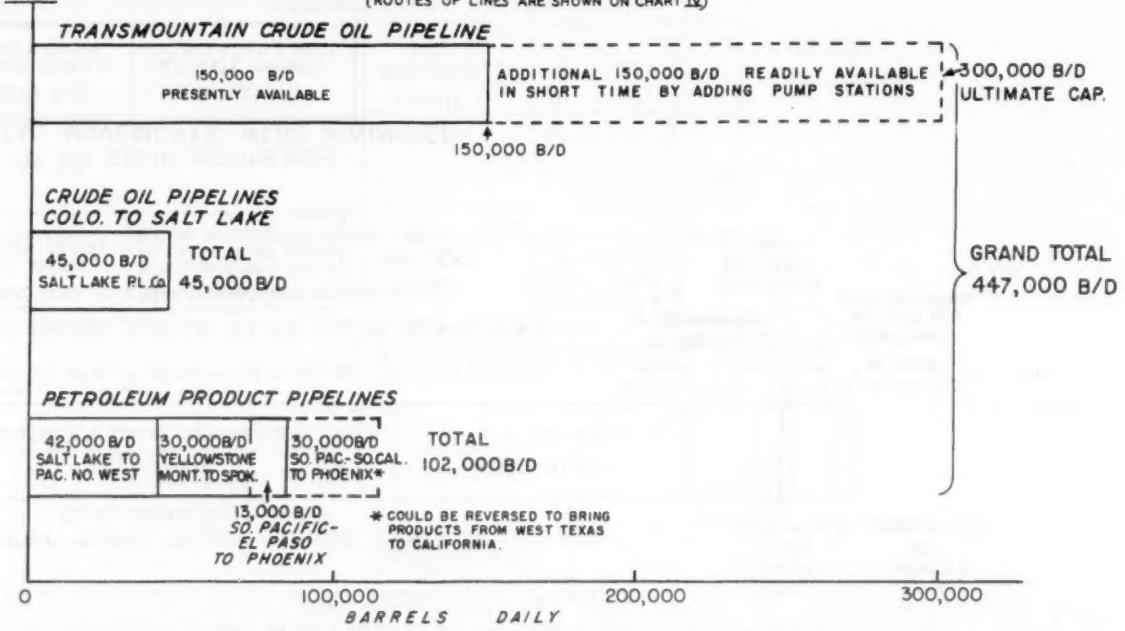
IV

TO HANDLE MOST OF THE NEW SUPPLIES SHOWN ON CHART II

SINCE 1946

(CURRENT OR BUILDING INPUT CAPACITIES)

(ROUTES OF LINES ARE SHOWN ON CHART IV)


STARTING POINT 1946
TRANSMOUNTAIN CRUDE OIL PIPELINE
150,000 B/D PRESENTLY AVAILABLE
ADDITIONAL 150,000 B/D READILY AVAILABLE IN SHORT TIME BY ADDING PUMP STATIONS
300,000 B/D ULTIMATE CAP.
150,000 B/D
CRUDE OIL PIPELINES COLO. TO SALT LAKE
45,000 B/D SALT LAKE PL. Co.
TOTAL 45,000 B/D
GRAND TOTAL 447,000 B/D
PETROLEUM PRODUCT PIPELINES
42,000 B/D SALT LAKE TO PAC. NO. WEST
30,000 B/D YELLOWSTONE MONT. TO SPOK.
30,000 B/D SO. PAC.-SO. CAL. TO PHOENIX*
TOTAL 102,000 B/D
13,000 B/D SO. PACIFIC-EL PASO TO PHOENIX
* COULD BE REVERSED TO BRING PRODUCTS FROM WEST TEXAS TO CALIFORNIA.
0
100,000
200,000
300,000
BARRELS DAILY

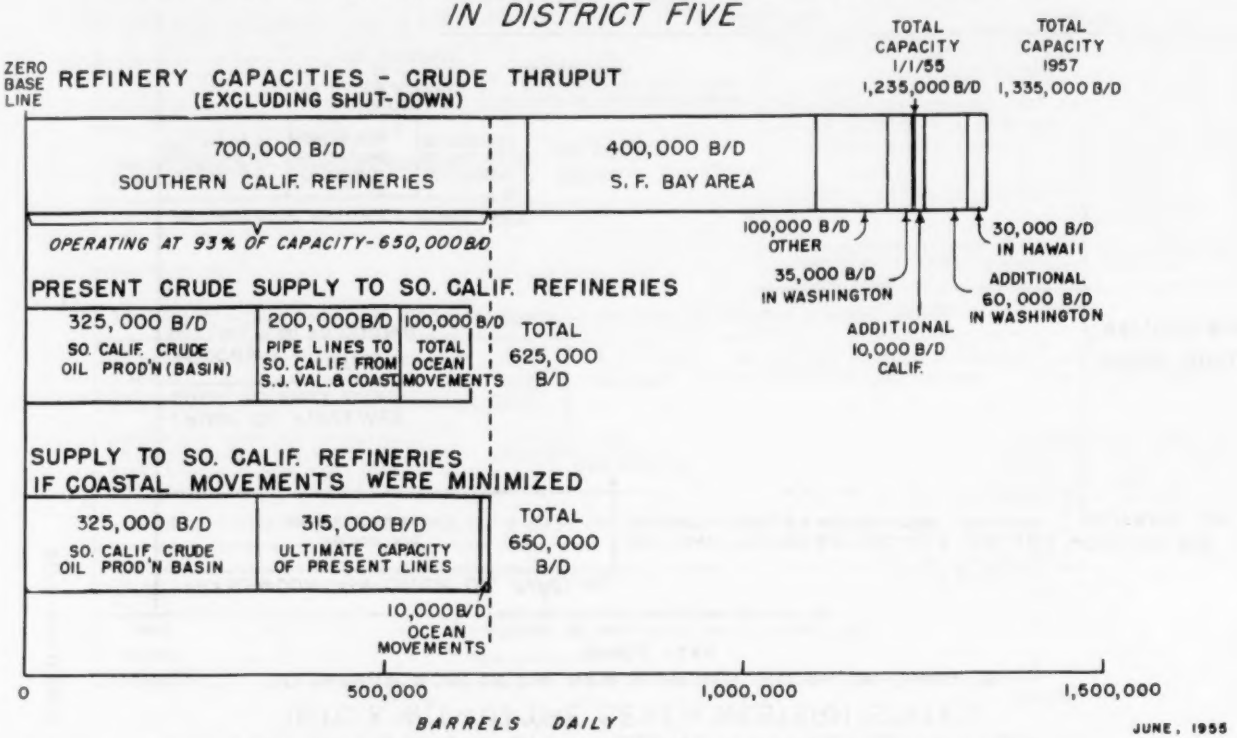
SOURCES: VARIOUS COMPANIES' RELEASES.

JUNE, 1955

EXHIBIT 5

V

REFINERY CAPACITIES AND CRUDE OIL MOVEMENTS
IN DISTRICT FIVE



SOURCES: U.S. BUREAU OF MINES, OIL & GAS JOURNAL, CONSERVATION COMMITTEE CALIF. OIL PRODUCERS.

ESTIMATED RAW MATERIAL & PETROLEUM PRODUCT SUPPLIES

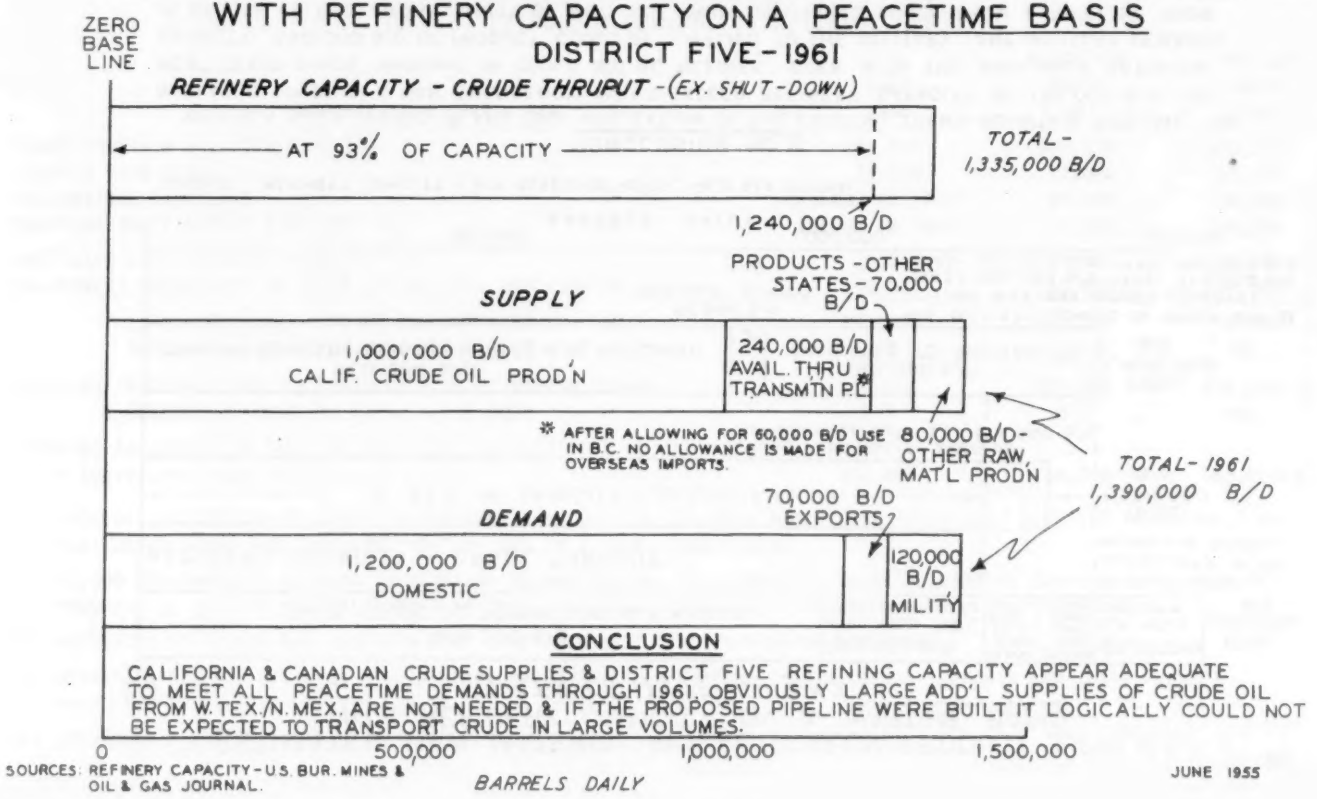
SOURCES: U.S. BUREAU OF MINES, OIL & GAS JOURNAL, CONSERVATION COMMITTEE CALIF. OIL PRODUCERS.

EXHIBIT 6

ESTIMATED RAW MATERIAL & PETROLEUM PRODUCT SUPPLIES WITH REFINERY CAPACITY ON A PEACETIME BASIS

VI

DISTRICT FIVE - 1961


ZERO BASE LINE
REFINERY CAPACITY - CRUDE THRUPUT - (EX. SHUT-DOWN)
AT 93% OF CAPACITY
TOTAL - 1,335,000 B/D
1,240,000 B/D
PRODUCTS - OTHER STATES - 70,000 B/D
SUPPLY
1,000,000 B/D CALIF. CRUDE OIL PROD'N
240,000 B/D AVAIL. THRU TRANSMTN P.L.*
* AFTER ALLOWING FOR 60,000 B/D USE IN B.C. NO ALLOWANCE IS MADE FOR OVERSEAS IMPORTS.
80,000 B/D - OTHER RAW MAT'L PRODN
TOTAL - 1961 1,390,000 B/D
70,000 B/D EXPORTS
DEMAND
1,200,000 B/D DOMESTIC
120,000 B/D MILITARY
CONCLUSION
CALIFORNIA & CANADIAN CRUDE SUPPLIES & DISTRICT FIVE REFINING CAPACITY APPEAR ADEQUATE TO MEET ALL PEACETIME DEMANDS THROUGH 1961. OBVIOUSLY LARGE ADD'L SUPPLIES OF CRUDE OIL FROM W. TEX./N. MEX. ARE NOT NEEDED & IF THE PROPOSED PIPELINE WERE BUILT IT LOGICALLY COULD NOT BE EXPECTED TO TRANSPORT CRUDE IN LARGE VOLUMES.
0
500,000
1,000,000
1,500,000
BARRELS DAILY

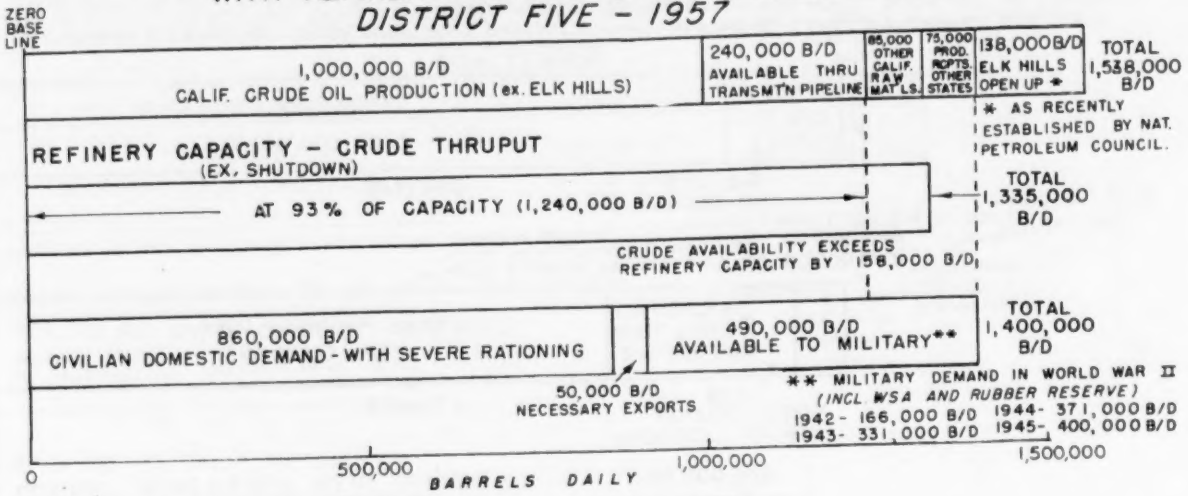
SOURCES: REFINERY CAPACITY - U.S. BUR. MINES & OIL & GAS JOURNAL.

JUNE 1955

VII

ESTIMATED RAW MATERIAL AND PETROLEUM PRODUCT SUPPLIES WITH REFINERY CAPACITY ON A WARTIME BASIS

DISTRICT FIVE - 1957



SOURCE: REFINERY CAPACITY - U.S. BUREAU OF MINES, OIL & GAS JOURNAL.

CONCLUSION NO II

WITH ELK HILLS OPENED UP AND FULL UTILIZATION OF THE EXISTING TRANS-MOUNTAIN PIPELINE, THE AVAILABLE CRUDE IN A WAR EMERGENCY WOULD EXCEED REFINERY CAPACITY BY 138,000 B/D. ANY WEST TEXAS CRUDE BROUGHT IN COULD NOT BE REFINED. EVEN WITH THE AVAILABLE REFINING CAPACITY, 490,000 B/D OF PRODUCT COULD BE SUPPLIED TO THE MILITARY. ANY MILITARY DEMANDS IN EXCESS OF THIS AMOUNT MUST BE MET, NOT FROM ADDITIONAL CRUDE FROM A PIPELINE FROM WEST TEXAS, BUT FROM REFINED PRODUCTS BROUGHT INTO THE AREA IN THOSE PROPORTIONS DICTATED BY UNSATISFIED MILITARY DEMANDS.

JUNE, 1955

VIII

CONCLUDING SUMMARY OF THE INCREASES

CONCLUDING SUMMARY OF THE INCREASES IN THE SUPPLIES OF HYDROCARBONS SINCE 1946 TO MEET PETROLEUM DEMANDS IN DISTRICT FIVE

VIII

INCREASE OVER 1946 - B/D	YEAR 1954	PEACETIME BASIS (1961)	WARTIME BASIS (1957)
TRANS MOUNTAIN OIL PIPE LINE (1)	101,000	300,000	300,000
PIONEER PIPE LINE	12,000	12,000	12,000
YELLOWSTONE PIPE LINE	(BLDG. IN 1954)	30,000	30,000
SOUTHERN PACIFIC PIPE LINE (2)	(BLDG. IN 1955)	13,000	30,000
SALT LAKE CITY REFINING CAPACITY (3)	52,000	52,000	52,000
CALIFORNIA PRODUCTION OF CRUDE AND NATURAL GAS LIQUIDS	136,000	136,000	294,000
TOTAL INCREASE IN PETROLEUM SUPPLIES	301,000	543,000	718,000
PERCENTAGE INCREASE (1946 = 940,000)	32%	58%	76%
INCREASE IN TOTAL DISTRICT DISTRICT FIVE PETROLEUM DEMAND	257,000	492,000	502,000(4)
PERCENTAGE INCREASE (1946 = 898,000)	29%	55%	56%
INCREASE IN IMPORTS OF NATURAL GAS INTO DISTRICT FIVE (IN EQUIVALENT CRUDE OIL)	250,000	400,000	335,000(5)

(1) INCLUDES DELIVERIES OF CRUDE TO REFINERIES IN BRITISH COLUMBIA WHICH WERE PREVIOUSLY SUPPLIED PRINCIPALLY BY CALIFORNIA CRUDE AND PRODUCTS. THE 101,000 IS A JULY, 1955 FIGURE.

(2) 13,000 B/D CAPACITY EL PASO TO PHOENIX: 30,000 B/D SO. CALIFORNIA TO PHOENIX. WARTIME BASIS ASSUMES FLOW OF PRODUCTS EL PASO TO SO. CALIFORNIA AT TOTAL POTENTIAL CAPACITY OF 30,000 B/D.

(3) AUGMENTED BY 42,000 B/D PRODUCTS PIPE LINE FROM SALT LAKE TO PACIFIC NORTHWEST.

(4) DEMAND REPRESENTS CIVILIAN REQUIREMENTS UNDER SEVERE RATIONING PLUS NECESSARY EXPORTS AND TOTAL PRODUCT AVAILABLE TO MILITARY WITHIN LIMITS SET BY REFINERY CAPACITY.

(5) ANNOUNCED PLAN EXPANSION OF NATURAL GAS LINES NOT TO BE COMPLETED UNTIL 1959.

JUNE 30, 1955

EXHIBIT 9

WESTERN OIL AND GAS ASSOCIATION
PRESENTS TO
MEMBERS OF HOUSE ARMED SERVICES
SUBCOMMITTEE FOR SPECIAL INVESTIGATIONS

STATISTICAL RECORD OF CALIFORNIA CRUDE OIL PRODUCTION

INCLUDES:

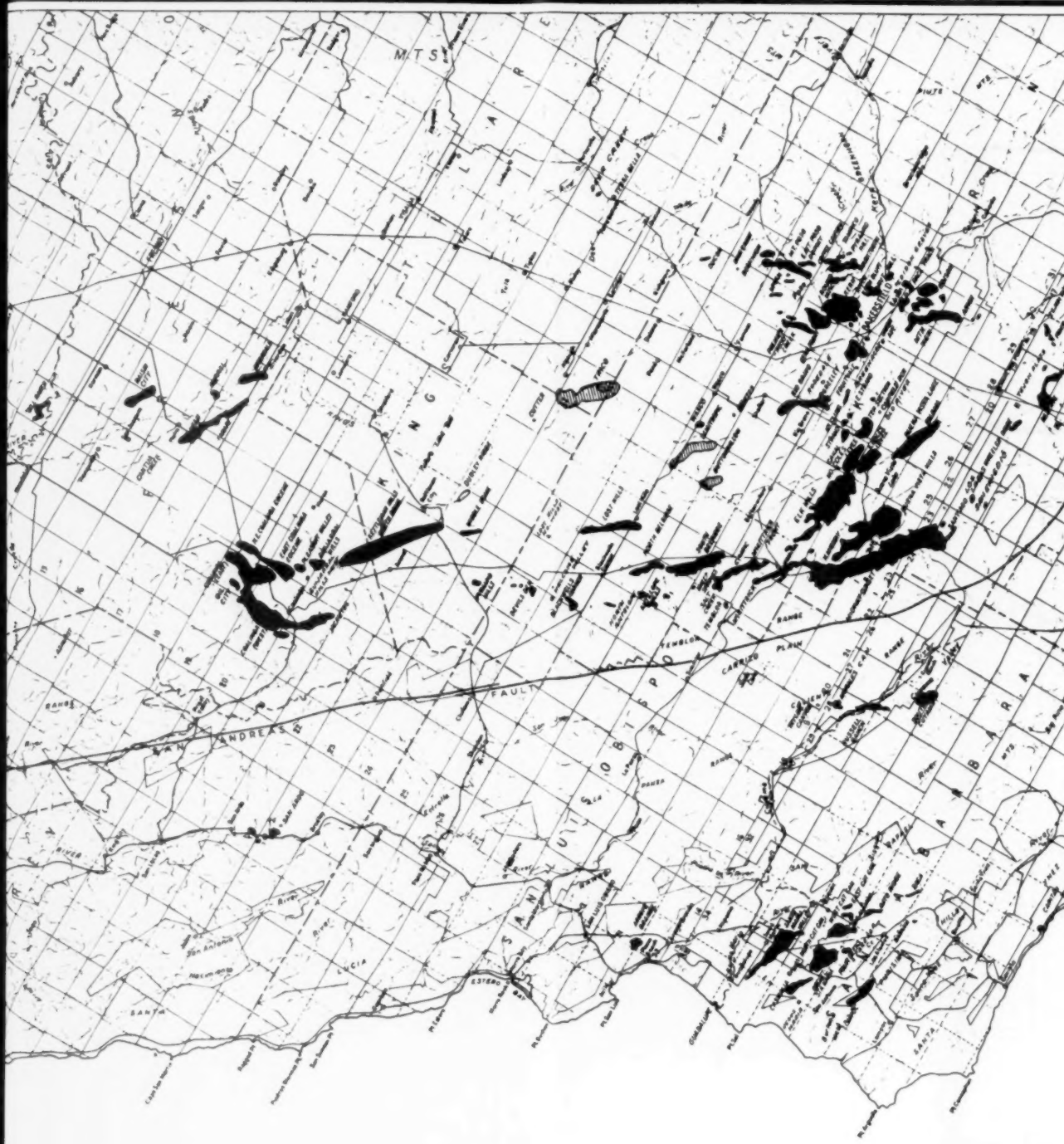
HISTORICAL — Charts and Tables for 1954 and Prior Years

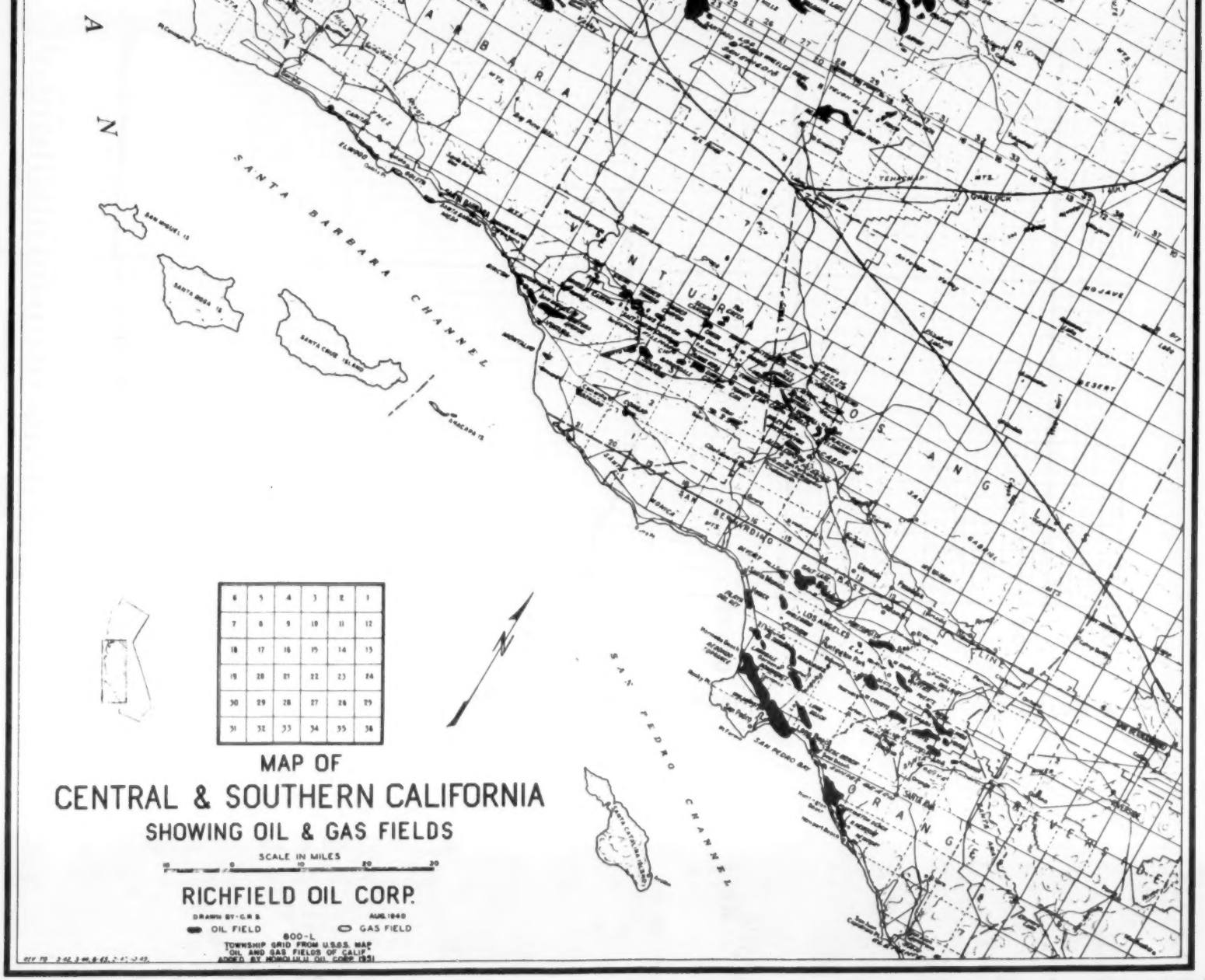
FIELDS AND POOLS — Company Data for April 1955

MATERIAL CONTAINED HEREIN IS EXCERPTED FROM 1954 ANNUAL REVIEW AND FROM OTHER PUBLICATIONS OF *CONSERVATION COMMITTEE OF CALIFORNIA OIL PRODUCERS*

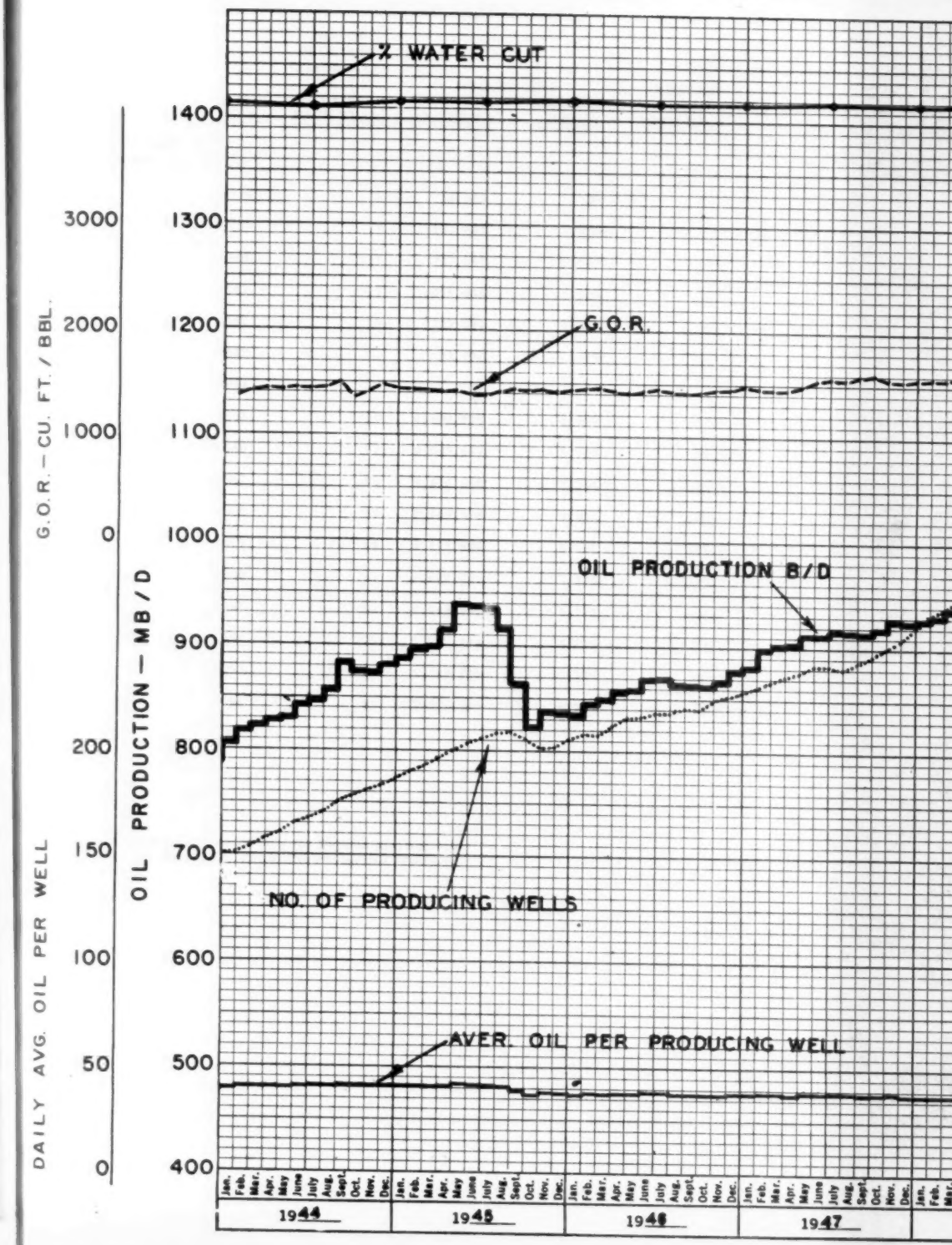
HEARINGS IN LOS ANGELES
JULY 11, 12, AND 13, 1955

SIERRA NEVADA MTS.
SACRAMENTO VALLEY
SAN JOAQUIN VALLEY
COAST RANGES
SAN FRANCISCO BAY
SAN PABLO BAY
MONTEREY BAY
SAN ANDREAS FAULT
PACIFIC

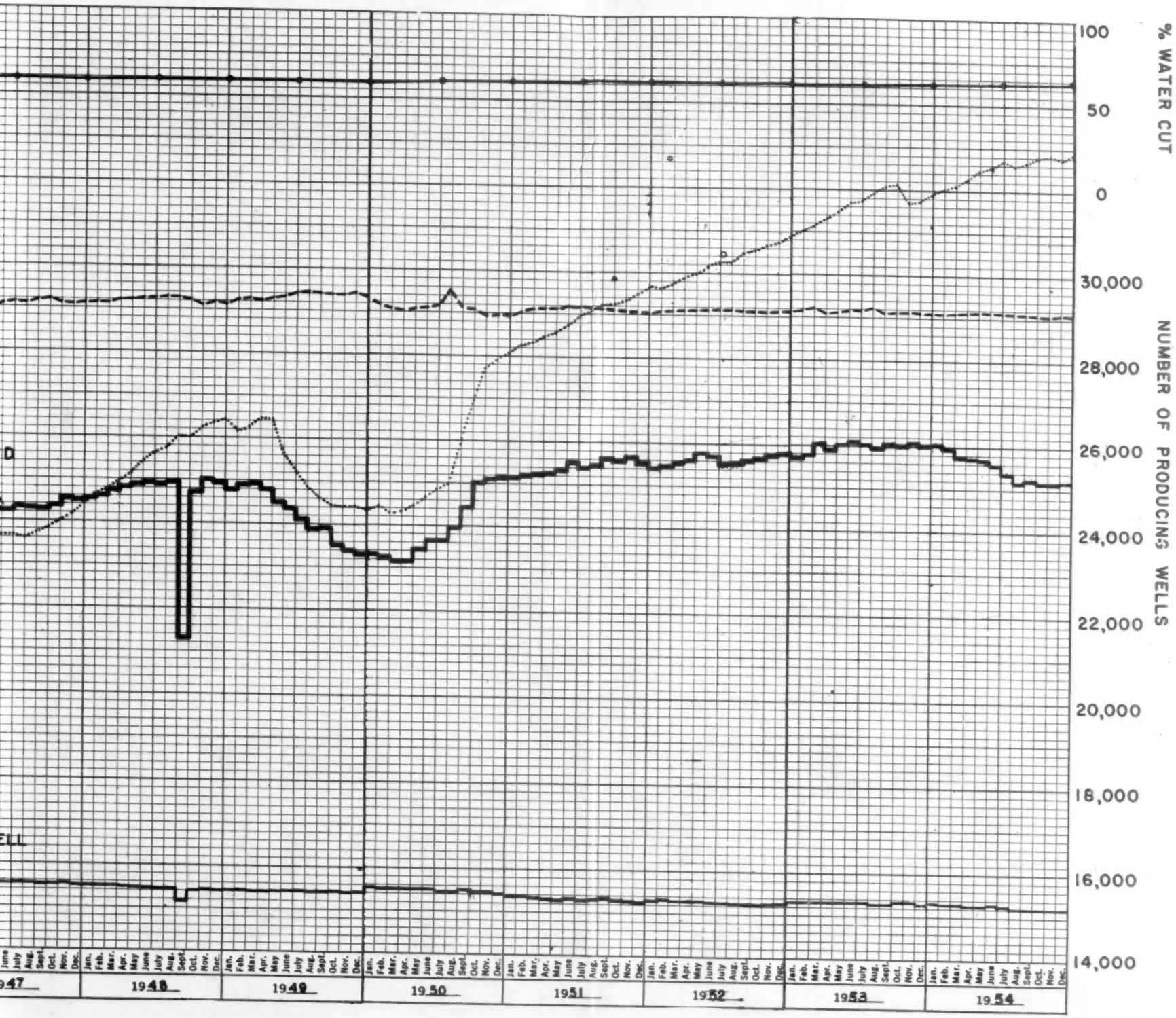

MTS.
SAN LUIS OBISPO
SANTA BARBARA
SAN ANDREAS FAULT
OCEAN


SANTA BARBARA CHANNEL
SAN PEDRO CHANNEL
VENTURA
LOS ANGELES
ORANGE
MAP OF
CENTRAL & SOUTHERN CALIFORNIA
SHOWING OIL & GAS FIELDS
SCALE IN MILES
RICHFIELD OIL CORP.
OIL FIELD
GAS FIELD
TOWNSHIP GRID FROM U.S.G.S. MAP
"OIL AND GAS FIELDS OF CALIF."
ADDED BY HONOLULU OIL CORP. 1951

CALIFORNI


% WATER CUT
G.O.R.
OIL PRODUCTION B/D
NO. OF PRODUCING WELLS
AVER. OIL PER PRODUCING WELL
DAILY AVG. OIL PER WELL
OIL PRODUCTION — MB / D
G.O.R. — CU. FT. / BBL.
3000
2000
1000
0
200
150
100
50
0
1400
1300
1200
1100
1000
900
800
700
600
500
400
Jan. Feb. Mar. Apr. May June July Aug. Sept. Oct. Nov. Dec.
1944
1945
1946
1947

ALIFORNIA CRUDE OIL PRODUCTION



65499 O - 55(Face p. 956) No. 2

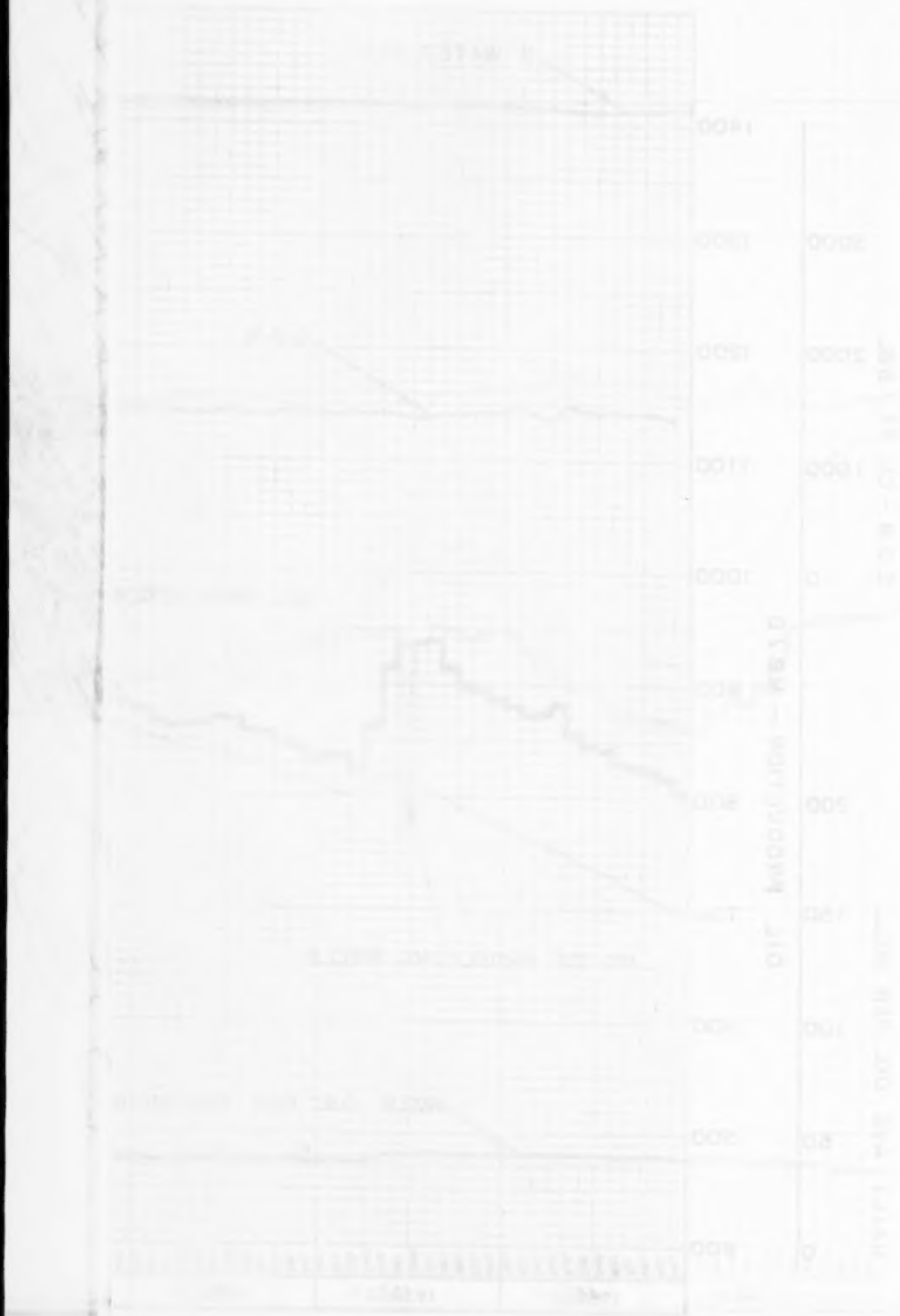


TABLE I

CALIFORNIA ANNUAL CONDENSATE PRODUCTION

SOURCE	YEAR	NO. OF PRODUCING CONDENSATE WELLS (DECEMBER EACH YEAR)	PRODUCTION		BARRELS DAILY PER WELL
			BARRELS #	BARRELS DAILY	
CONSERVATION COMMITTEE					
	1938	1	10,345	28	28.0
	1939	7	151,883	416	59.4
	1940	17	727,197	1,987	116.9
	1941	17	1,053,043	2,885	169.7
	1942	25	713,880	1,956	78.2
	1943	-	23,770	65	-
	1944	-	112	-	-
	1945	28	1,809,239	4,957	177.0
	1946	32	2,097,637	5,747	179.6
	1947	40	2,833,853	7,764	194.1
	1948	43	2,449,419	6,692	155.6
	1949	46	2,175,594	5,961	129.6
	1950	61	2,620,493	7,179	117.7
	1951	54	2,449,905	6,712	124.3
	1952	71	1,915,918	5,235	73.7
	1953	73	2,349,924	6,438	88.2
	1954	83	2,098,006	5,748	69.3

Includes plant condensate only for Paloma starting 1945.
Figures not included in Crude Oil Production (Table II).

CALIFORNIA ANNUAL CRUDE OIL PRODUCTION #

TABLE II

SOURCE	YEAR	NO. OF PRODUCING OIL WELLS (DECEMBER EACH YEAR	PRODUCTION BARRELS	PRODUCTION BARRELS DAILY	BARRELS DAILY PER WELL
Petroleum Data Book	Prior to 1903		41,659,000		
	1903	2,608	24,382,000	66,800	25.6
	1904	2,713	29,649,000	81,000	29.9
	1905	2,456	33,428,000	91,600	37.3
	1906	2,426	33,099,000	90,700	37.4
	1907	2,827	39,748,000	108,900	38.5
	1908	3,399	44,855,000	122,600	36.1
	1909	3,919	55,472,000	152,000	38.8
	Cumulative		362,292,000		
	1910	4,692	73,011,000	200,000	42.6
	1911	5,138	81,134,000	222,300	43.3
	1912	5,626	87,269,000	238,400	42.4
	1913	5,870	97,788,000	267,900	45.6
	1914	6,106	99,775,000	273,400	44.8
	1915	6,532	86,592,000	237,200	36.3
	1916	7,333	90,952,000	248,500	33.9
	1917	8,053	93,878,000	257,200	31.9
	1918	8,606	97,532,000	267,200	31.0
	1919	9,127	101,183,000	277,200	30.4
	Cumulative		1,211,406,000		
	1920	9,621	103,377,000	282,500	29.4
	1921	9,978	112,600,000	308,500	30.9
A. P. I.	1922	8,916	138,468,000	379,400	42.6
	1923	9,396	262,876,000	720,200	76.6
	1924	11,319	228,933,000	625,500	55.3
	1925	11,069	232,492,000	637,000	57.5
	1926	11,333	224,673,000	615,500	54.3
	1927	11,284	231,196,000	633,400	56.1
	1928	10,711	231,811,000	633,400	59.1
	1929	10,515	292,534,000	801,500	76.2
	Cumulative		3,270,366,000		
	1930	9,454	227,329,000	622,800	65.9
	1931	8,612	188,830,000	517,300	60.1
	1932	9,039	178,128,000	486,700	53.8
	1933	10,987	172,010,000	471,300	42.9
	1934	11,750	174,305,000	477,500	40.6
	Adjustment prior to 1935		40,071,857*		
Conservation Committee	1935	12,971	205,908,823	564,100	43.5
	1936	12,369	213,111,732	582,300	47.1
	1937	13,673	237,034,581	649,400	47.5
	1938	13,979	248,982,472	682,100	48.8
	1939	14,845	224,181,926	614,197	41.4
	Cumulative		5,380,259,391		
	1940	15,364	221,837,630	606,114	39.5
	1941	16,981	228,035,591	624,755	36.8
	1942	18,911	246,482,186	675,294	35.7
	1943	20,015	283,647,839	777,117	38.8
	1944	21,487	310,931,599	849,540	39.5
	1945	22,219	325,931,989	892,964	40.2
	1946	23,180	314,640,100	862,028	37.2
	1947	24,421	334,035,777	915,167	37.5
	1948	26,472	341,114,802	932,008	35.2
	1949	24,365	333,984,240	915,025	37.6
	Cumulative		8,320,901,144		
	1950	28,102	328,577,736	900,213	32.0
	1951	29,624	354,554,256	971,382	32.8
	1952	30,891	359,449,601	982,103	31.8
	1953	31,923	365,084,795	1,000,232	31.3
	1954	32,864	355,865,420	974,974	29.7

Excludes condensate. See Table 1.

* Various adjustments in prior years' production.

Significant Statistics

CALIFORNIA FIELDS AND POOLS

CONSERVATION COMMITTEE

	DATE OF DISCOVERY	AVERAGE WELL DEPTH	API GRAVITY AVERAGE RANGE	AVERAGE	NUMBER OF WELLS - DECEMBER 31, 1954 NET PAYING RECORD SHUT-IN	DRILLED	TOTAL	TOTAL NO. OF COMP.	ABANDONED 1954	ABANDONED CUM. 1-1-55	NET AUTHORIZED POTENTIAL WITH NATURAL GAS OIL PRODUCTION (BARRELS PER DAY)	OIL PRODUCTION (BARRELS) THOUSAND BARRELS CUMULATIVE	1954	CUMULATIVE TO 1-1-55	1954	CUMULATIVE TO 1-1-55	PEAK PRODUCTION DATE	PEAK PRODUCTION B/D
SAN JOAQUIN VALLEY REGION																		
BIG BLUE																		
Olcese	July 1946	3,169	33-39	33.5	3	29	32	35	2			2,843	137		6	147	1947	1,256
Jewett	Oct. 1946	3,660	36-39	38.5	3	28	26	29				1,243	135				1947	157
ANTELOPE HILLS						5		6				498						
Main Blue	May 1942	2,396	37-38	37.5		10	6	6				643	33		6			
Main Red	May 1942	2,396	35-38	36.5		1	6	6		2		6,166	446		446		1945	731
Phacelia	Jan. 1952	2,751	36-38	37.5		4	28	28				1,819	86		86		1952	1,196
	June 1952	2,844	36-38	37.4			2	2				4,110	359		359		1952	1,196
ANTELOPE HILLS NORTH	June 1950	2,476	35-36	35.5		5	5	5				156					1952	11
Blue						15	10	22				1,601	45		45		1952	1,253
BEAR MTN.	May 1944	7,337	29-36	34.1		70	13	13		28		1,006	208		208		1952	899
BEARDSLEY NORTH					9		13	150				2,553	1,748		1,748			
Shallow	June 1952	1,744	33-37	33.6	8		71	89				82,405			17		1950	197
Tumbler	Oct. 1950	5,480	31-50	38.5		12	5	117				5,010					1950	7,705
Deep Zone	Sept. 1939	8,583	34-48	38.7		11	15	117				17,759			666		1951	737
Bolthead "A"	Dec. 1949	8,137	33-46	37.6	1	10	14	15				1,342			57		1950	11,044
"F" Sand	May 1942	9,017	31-37	37.4		4	5	5				14,076			316		1945	1,795
Tank Tumbler												2,716			78			
BELRIDGE SOUTH					59	359	348	1,127	1,186	1	122	2,454			667		1954	32,662
BIG BLUE	Apr. 1951	3,068	32-33	33.8	149	113	999	1,112	1,161	10	430	7,968	5,699		Included with Belridge			
BIG BLUE												460,377			Summit		1954	6,619
Deep Zone (1000 Area	June 1952	3,940	34-40	36.5		4	157	197	196	3		1,134			401		1954	
Deep Zone (2100 Area						97												
"F"-A	Mar. 1944	3,796	34-36	35.0			100	196	196	1		3,109	85,667		63		1947	35,125
Antelope Shale	Mar. 1952	4,800	27-36	32.5		1	16	19	19			1,560	2,755		1,317		1954	3,699
Pokers	1948	3,147	23-36	28.0		97	24	668	682	6		2,307			4,095		1955	34,965
CANAL	Nov. 1937	8,353	35-40	36.8	1	10	23	23	23	3		536	12,170		598		1950	5,871
CANFIELD RANCH						1	23	23	23			536	4,955	1,135				
CANFIELD RANCH																		
Stevens	Jan. 1938	8,072	26	26.2			1	1	1			7	215	6			1938	96
COMPTCHE EAST																		
Stevens	Dec. 1940	7,755	30-36	34.5		1	23	24	24	1	1	488	3,839	1,067	5,469		1951	2,277
COMPTCHE WEST																		
Stevens	Oct. 1944	7,858	33	33.0			1	1	1	1	2	5	148	3	336		1945	114
OLD RIVER																		
35-36R	Dec. 1953	8,127	34-35	34.5			3	3	3				37		58		1954	90
COMPTCHE-ORR					185	219	1,933	2,253	2,307	39	126	27,575			20,401			
COLLIER					78	142	1,256	1,398	1,433	21	68	178,338	16,776		1,860		1960	5,587
Bottoms Area - Tumbler	1887	2,935	12-33	22.8	28	142	768	910	933	21	267	47,491			573			
Bottoms Area - Tumbler	1901	1,876	12-22	15.3	134	85	818	903	979	21	407	175,668	2,439		208		1954	27,717
COLLIER EAST EXTENSION					2	72	156	228	277	21	33	16,695	10,479		227,036			
Northeast Area - Tumbler	Apr. 1939	6,215	25-34	29.7	1	71	95	166	167		26	348	34,727	8,957	96,843		1943	11,193
Northeast Area - Bowers	May 1952	6,450	33-34	33.5		1	1	1	1				10		10		1954	106
Bowers Area - Bowers	June 1938	7,843	28-33	29.8	1	43	117	156	167	5	7	16,308	2,393		2,393		1954	56,793
GOBERNADOR HILLS					1	4	4	4	4			7,743	80,160		32,065			
Allison	Apr. 1949	8,228	28-43	39.0		2	80	82	85	5	7	703	3,879	397	4,813		1950	3,091
Lois Marie	Oct. 1948	8,877	33-43	38.5		2	39	41	85	5		904	15,122	2,169	26,196		1950	10,942
HASLEMERE HILLS WEST	Jan. 1954	8,766	35-46	37.5		6	21	21	21		7	1,139	1,139	1,076	1,076		1954	3,120
Lois	Oct. 1953	8,357	34-38	34.5			4	4	4			495	495	252	252		1954	1,164
JACALITOS																		
Tumbler	1913	3,891	13-40	37.0	13	6	106	130	133	1	16	590	16,037	1,112	18,880		1949	6,788
KETTLEMAN																		
Crussenne	1890	1,200	35-36	35.4	6	6	1	7	33		31	2,504		3	Included with Coalinga			
PLEASANT VALLEY																		
Eocene	Feb. 1943	9,128	26-30	28.8		4	20	24	24		4	477	11,606	330	10,133		1947	4,110

Significant Statistics

CALIFORNIA FIELDS AND POOLS

CONSERVATION COMMITTEE

	DATE OF DISCOVERY	AVERAGE WELL DEPTH	API GRAVITY RANGE	API GRAVITY APPROX. AVERAGE	NUMBER OF WELLS - DECEMBER 31, 1954 WELL STATUS RECORD SHUT-IN STANDING	SHUT-IN IDLE	PRODUCING	TOTAL ACTIVE	TOTAL NO. OF WELLS	ABANDONED 1954	ABANDONED CUM. 1-1-55	OIL PRODUCTION (INCLUDES INJECTED GAS) THOUSAND BARRELS 1954	OIL PRODUCTION (INCLUDES INJECTED GAS) THOUSAND BARRELS CUMULATIVE TO 1-1-55	NET WITHDRAWAL FORMATION GAS MILLIONS CU. FT. 1954	NET WITHDRAWAL FORMATION GAS MILLIONS CU. FT. CUMULATIVE TO 1-1-55	PEAK PRODUCTION YEAR	PEAK PRODUCTION B/D
SAN JOAQUIN VALLEY REGION (CONT'D)																	
COLES LEVEE NORTH																	
Northwest Area - Stevens	Oct. 1939	9,880	31	313	1	18	142	160	161		2	5,391	78,955	(105)	(6,982)		
Richfield Western Area					1		2	2	3			19	429	16	276	1940	106
"71-1"	Oct. 1940	9,379	31-37	34.6		4	25	29	29			668	7,910	(179)	2,895	1952	2,862
Western "29"	Aug. 1940	9,375	33-37	37.0		2	19	21	21			392	5,923	731	3,921	1949	1,571
Main Western	Nov. 1938	9,238	33-45	36.0		10	95	105	105			4,294	64,953	(731)	(13,758)	1949	14,131
"68-29"	Dec. 1947	9,897	35-38	35.8		1	1	2	2			17	237	35	196	1950	128
"67-29"	Dec. 1953	17,892	54	54.1		1		1	1			1	3	33	78	1953	1
COLES LEVEE SOUTH					1	2	43	45	46	1	2	1,070	14,708	5,376	43,514		
Stevens F-1 (Crude Oil)	Mar. 1939	9,779	30-48	37.6		2	32	34	34		1	723	12,753	3,870	37,905	1947	2,671
Stevens F-2 (Crude Oil)	May 1940	9,865	32-40	34.0	1		11	11	12	1	1	347	1,955	1,506	5,609	1953	599
CUYAMA GROUP					5	36	121	157	162		2	16,976	107,185	4,104	15,752		
CUYAMA CENTRAL	May 1951	7,372	43	43.3			1	1	1			6	23	3	6	1951	18
CUYAMA SOUTH					3	17	232	249	252			12,764	63,385	866	29,547		
Main Area - "52-1"	Sep. 1951	2,221	25	25.5	1		1	1	2			7	7	2	2	1954	19
- Johnston	1950		(Condensate)		1				1								
- Homan	May 1949	4,505	28-36	32.0	1	17	214	231	232			12,626	61,658	783	29,123	1951	37,935
- Hibbard	Nov. 1950	4,473	23-37	35.2			15	15	15			325	1,611	80	404	1952	1,622
Southeast Area - Cox	Apr. 1951	5,847	36-37	36.7			2	2	2			6	106	1	18	1952	64
MORALES CANYON					2	1	25	26	28		1	169	1,318	126	1,028		
Clayton	Apr. 1950	2,177	28-37	31.9	2	1	18	19	21		1	78	655	33	343	1951	646
Government "18"	Apr. 1950	5,908	36-39	38.5			7	7	7			91	663	93	675	1952	474
RUSSELL RANCH						18	161	179	179		1	3,999	37,215	3,098	15,103		
Main Area - Sloan	Nov. 1950	2,213	21-29	25.7			11	11	11			145	1,133	203	1,176	1952	1,110
- Dibblee	June 1948	3,219	30-38	34.0		17	97	114	114			3,271	29,546	2,389	10,414	1950	14,870
- Russell "15-5"	Nov. 1952	3,706	38-40	39.2			11	11	11			125	252	149	332	1954	344
- Colgrove North	Apr. 1949	3,708	35-39	36.3			12	12	12			195	2,216	202	1,469	1953	1,818
- Colgrove South	Feb. 1949	3,586	37-40	38.5			20	20	20		1	226	3,633	108	1,280	1950	2,538
Morris Area - Morris	Jan. 1948	2,045	22-28	25.0			2	2	2			1	13		33	1948	23
- Griggs-Dibblee	Oct. 1949	3,799	36-38	36.7			8	8	8			38	422	27	238	1950	478
West Area	Oct. 1951	1,107	22	22.0		1		1	1							1954	
TAYLOR CANYON	Aug. 1950	5,948	31-39	38.7			2	2	2			38	224	11	80		
EDISON					24	29	662	691	705	5	69	5,844	68,730	5,127			
Main Area - Upper	May 1934	1,869	25-28	19.0	4	2	106	108	112	2		484	14,480	100		1936	4,702
- Fractured Schist	June 1945	3,413	13-29	19.9	3	1	121	122	125			2,100	24,782	929	3,273	1946	10,782
Fortale-Fairfax Area - Wicker	Nov. 1934	4,522	15-26	18.0	2	1	50	51	53			167	1,506	20		1953	634
West Area	May 1934	3,884	17-44	30.5	15	15	238	253	268	2		1,346	13,662	234		1951	3,988
Edison Grove Area																	
D-L-K	Oct. 1953	1,863	16-17	16.4		1	12	13	13	1		27	28			1954	24
Shields-Arms	Dec. 1950	3,577	13-14	13.6			9	9	9			73	411	8	35	1952	382
Race Track Hill Area																	
Chanac)																	
Fortale-Berry)	Oct. 1947	3,034	14-17	15.0		1	11	12	12			23	171	1		1952	124
Jewett	Sep. 1944	4,779	37-42	40.0		5	24	29	29			168	1,540	405	4,048	1953	845
Pyramid Hill	Apr. 1945	4,759	38-42	42.0		2	52	54	54			837	3,935	2,318	11,720	1954	2,294
Vedder	Apr. 1946	4,938	39-43	41.5		1	15	16	16			299	1,832	569	2,118	1954	819
Jewett Area	Dec. 1952	5,916	38-43	39.8			14	14	14			309	383	583	672	1954	826
KEM HILLS					58	627	337	964	1,022	1	89	7,096	123,714	763	157,098		
Main Area - Upper	Jan. 1919	3,017	11-44	21.4	57	404	326	730	787	1		7,501	119,779	557	148,425	1921	49,549
"31-5" Area - 26-R	Feb. 1951	6,947	34-37	36.5		28		28	28			25	433	20	340	1952	381
- B	Aug. 1953	7,280	34	33.7		1		1	1				1		1	1953	2
- A	May 1946	6,714	31-43	37.6	1	36		36	37			39	415	28	347	1950	432
- B	Mar. 1942	6,894	32-39	36.0		82		82	82			75	1,602	56	1,252	1942	1,327
- D	Aug. 1943	6,834	33-39	35.0		23		23	23			13	612	10	473	1949	748
- P & O	1947												2		2	1947	5
"29-2" Area - A	July 1950	6,044	32-37	35.2		8		8	8			2	85	1	65	1950	108
- B	Dec. 1945	6,804	32-38	35.0		21		21	21			3	308	3	240	1949	487
- D	Dec. 1948	6,903	23-36	34.2		11		11	11			4	167	6	128	1948	238
- Carneros	Jan. 1952	9,308	51	50.6		2		2	2			3	30	63	340	1953	61

Significant Statistics

CALIFORNIA FIELDS AND POOLS

CONSERVATION COMMITTEE

	DATE OF DISCOVERY	AVERAGE WELL DEPTH	API GRAVITY RANGE	API GRAVITY AVERAGE	NUMBER OF WELLS - DECEMBER 31, 1954 WELL STATUS RECORD SHUT-IN	GAS	PRODUCING	TOTAL ACTIVE	TOTAL NO. OF WELLS	ABANDONED CUM. 1954	ABANDONED CUM. 1-1-55	OIL PRODUCTION THOUSAND BARRELS 1954	OIL PRODUCTION THOUSAND BARRELS CUMULATIVE TO 1-1-55	NET WITHDRAWAL FORMATION GAS (DEDUCTS INJECTED GAS) MILLIONS CU. FT. 1954	NET WITHDRAWAL FORMATION GAS (DEDUCTS INJECTED GAS) MILLIONS CU. FT. CUMULATIVE TO 1-1-55	PEAK PRODUCTION YEAR	PEAK PRODUCTION B/D
SAN JOAQUIN VALLEY REGION (CONT'D)																	
KERN HILLS (CONT'D)																	
24-2 Area - 24-2	Apr. 1946	6,181	26-37	33.5		10	1	11	11			31	309	19	203	1950	189
- A	Aug. 1948	6,955	27	27.8		1		1	1				19		11	1948	44
Northwest Area - Olig	Oct. 1944	6,556	31	31.0	(Abandoned)								7		240	1944	3
FRESNO GROUP					10	55	238	293	303	1	59	3,575	44,855	5,649	82,184		
BURREL																	
Miocene	Oct. 1943	6,606	27-31	30.2	4	1	4	5	9		2	66	666	198	1,002	1950	532
CAMDEN	June 1951	6,098	32-34	32.7	2		4	4	6		2	22	125	28	62	1952	125
HELM					2	25	74	99	101	1	23	900	14,817	3,746	48,584		
Lanare Area - Miocene	May 1943	7,158	32-36	34.5	1	1	19	20	21	1	14	309	3,623	378	4,038	1946	1,813
- Eocene	Jan. 1944	8,165	28-32	31.3	1		8	8	9			36	678	26	853	1946	340
Main Area - Miocene	Oct. 1941	6,822	28-37	32.7		2	14	16	16		7	307	2,963	149	3,960	1947	1,098
- Eocene	Feb. 1948	8,130	30-41	38.0		22	33	55	55		2	248	7,595	3,199	40,033	1946	3,421
RAISIN CITY					2	14	110	124	126		10	1,944	16,177	560	12,594		
Tar-Miocene	Dec. 1944	4,870	16-21	17.2	1	2	18	20	21			434	1,801	71	664	1951	1,134
Miocene	June 1941	5,229	13-27	23.4		11	80	91	91			1,281	11,118	334	7,335	1951	4,721
Eocene	Aug. 1943	6,456	27-31	28.5	1	1	12	13	14			249	3,721	135	4,295	1944	1,179
RIVERDALE						15	39	54	54		22	612	17,553	980	20,033		
Miocene	Dec. 1941	7,674	33-41	34.9		13	26	39	39			495	8,130	813	13,499	1947	2,840
Eocene	June 1943	7,904	34-37	36.5		2	13	15	15			117	4,423	107	6,534	1945	2,168
SAN JOAQUIN																	
Eocene	Mar. 1947	7,030	28-30	29.3			7	7	7			31	527	7	229	1949	372
FRUITVALE																	
Martin-Kernco	Feb. 1908	4,100	15-24	20.9	32	19	357	376	408	4	46	3,276	62,120	1,436		1954	9,797
GREELEY					3	24	78	102	105		5	4,531	61,604	1,287	47,434		
Stevens	Dec. 1936	7,814	30-36	33.0	2	3	12	15	17			152	5,521	151	16,039	1938	3,038
12-21	Feb. 1949	10,805	33	33.1			1	1	1			7	78	4	47	1949	64
Rio Bravo-Tedder	June 1938	11,506	35-41	36.5	1	21	65	86	87			4,372	59,275	1,132	31,348	1944	13,473
GUERNSEY					1		3	3	4			11	12	4	4		
Billington	Nov. 1953	4,355	19-21	20.5			3	3	3			10	11	4	4	1954	27
Flank	Dec. 1953	4,690			1							1	1			1953	2
KERN BLUFF	Feb. 1944	1,181	14-16	15.0	2	1	129	130	132		4	445	1,660			1949	2,298
KERN FRONT	Aug. 1925	2,260	12-17	14.2	37	18	675	693	730		26	2,245	84,112	214		1949	12,669
LOST HILLS	June 1939	897	11-16	13.8	255	648	2,195	2,843	3,098	8	692	2,919	326,032			1954	47,046
KETTLEMAN MIDDLE DOME					1		2	2	3		3	29	842	320	3,430		
Eocene	Feb. 1947	11,588	49	49.1	1		2	2	3			29	328	320	3,430	1950	180
Temblor	Dec. 1931	7,495			(Abandoned)								514			1933	426
KETTLEMAN NORTH DOME					4	159	289	448	452		29	6,061	402,191	37,958	2,290,391		
Temblor	Oct. 1928	8,296	27-45	35.0	3	117	225	342	345			4,708	368,567	10,869	1,537,526	1936	79,664
Vaqueros	Aug. 1938	8,784	33-40	38.1	1	25	39	64	65			643	18,988	222	38,779	1948	6,590
Eocene	July 1937	10,658	26-43	38.5		17	25	42	42			698	14,636	26,887	715,086	1951	4,045
LOS LOBOS							16	16	16			328	543	93	128		
18-7	July 1952	7,526	15-17	16.8			9	9	9			174	387	31	61	1953	499
27-20	Dec. 1953	6,759	24-25	24.7			7	7	7			154	156	62	67	1954	422
LOST HILLS					52	8	695	663	715	3	56	1,982	75,447	1,936			
Main	1930	1,887	12-38	20.5	43	6	532	538	581	1		1,398	69,313	1,014		1948	7,282
Farnsworth)	Apr. 1953	2,622	24-26	24.8			3	3	3			6	10	2	3	1954	16
Saunders)																	
Williamson	June 1936	1,722	11-23	13.8	7	2	56	58	65	2		116	4,345	156		1948	1,739
0-1	Aug. 1952	7,704	12-33	24.0			38	38	38			299	882	211	551	1953	1,300
Overall	Aug. 1954	3,278	21	21.0			1	1	1			2	2	2	2	1954	6
Cahn	Dec. 1948	4,926	30-35	32.0	2		25	25	27			161	894	951		1952	768
Seaman	July 1953	6,048	31	31.2	(Abandoned)								1			1953	4
MCKITTRICK ANTICLINE					4	3	35	38	42	1	6	379	1,763	217	1,654		
Bacon Hills Area	Apr. 1947	1,550	20-21	20.3		3		3	3			2	165		885	1948	251
Layman Area	July 1945	2,022	15-41	28.0	4		35	35	39	1		377	1,598	217	769	1954	1,032

Significant Statistics

CALIFORNIA FIELDS AND POOLS

CONSERVATION COMMITTEE

	DATE OF DISCOVERY	AVERAGE WELL DEPTH	API GRAVITY RANGE	API GRAVITY AVERAGE	NUMBER OF WELLS - DECEMBER 31, 1954 — WELL STATUS REVISED: SHUT-IN STANDING	SHUT-IN IDLE	PRODUCING	TOTAL ACTIVE	TOTAL NO. OF WELLS	ABANDONED 1954	ABANDONED CUM. 1-1-55	OIL PRODUCTION (DEDUCTS INJECTED GAS) THOUSAND BARRELS 1954	THOUSAND BARRELS CUMULATIVE TO 1-1-55	NET WITHDRAWAL FORMATION GAS MILLIONS CU. FT. 1954	MILLIONS CU. FT. CUMULATIVE TO 1-1-55	PEAK PRODUCTION YEAR	PEAK PRODUCTION B/D
SAN JOAQUIN VALLEY REGION (CONT'D)																	
McKITTRICK CREST					115	59	779	859	944	7	170	7,744	168,956	19,998			
BELGIAN ANTICLINE					1	14	81	95	96		2	7,937	40,215	15,436	52,270		
Northwest Area						6	63	69	69			2,279	7,132	17,562	47,238		
Phacoides	Aug. 1950	3,908	Producing gas only			1	2	2	2				1	4	79	1953	2
Oceanic	May 1951	5,689	32-44	35.6		1	30	31	31			1,432	3,987	4,760	8,338	1954	3,868
Point of Rocks First	Oct. 1950	6,190	33-36	35.2			3	3	3			15	41	115	1,000	1953	48
Point of Rocks Second	Apr. 1952	6,308	29-39	33.5			17	17	17			780	2,860	3,649	8,735	1953	4,138
Point of Rocks Third	Nov. 1951	6,872	28-38	33.5		4	12	16	16			72	263	9,734	29,086	1953	319
Southeast Area					1	8	17	25	26			221	2,852	879	4,757		
Rankin	May 1949	4,480	38	37.9	1				1				15	10	19	1949	20
Phacoides	Sep. 1947	4,550	34-39	36.4		3	5	8	8			31	471	111	1,006	1950	229
Oceanic "A"	May 1947	4,910	37-39	37.6		3	2	5	5			111	1,438	474	1,395	1949	818
Oceanic "C"	Jan. 1951	4,938	30-31	30.3		2		2	2				4		17	1952	11
Oceanic "D"	May 1949	5,178	42	42.0			1	1	1			3	14	150	660	1952	11
Point of Rocks	May 1947	5,525	34-39	36.4			9	9	9			76	909	194	1,641	1947	482
Telephone Hills Area																	
Oceanic	June 1950	5,495	35	34.9			1	1	1			7	239	25	275	1950	416
BELGIAN ANTICLINE NORTHWEST					1	1	14	15	16	1	1	604	780	263	273		
Carneros	Dec. 1951	4,627	33	33.0	1				1				2			1951	5
Phacoides	Mar. 1953	3,116	38-41	40.1		1	14	15	15	1	1	604	780	263	273	1954	1,656
CYMRIC					45	33	430	463	498	5	60	3,674	55,828	1,142			
McKittrick Front Area					15	4	84	90	105		22	434	9,366	143			
Upper		1,340	11-15	12.5	12	2	63	65	77			226	3,847	44		1948	1,328
Lower	July 1917	1,394	16-20	17.5	3	2	73	75	78			208	5,499	119		1942	1,310
Welport Area					29	7	236	243	272		5	1,767	30,458	1,124			
Shallow	1916	1,128	11-16	12.5	20		176	176	196			532	8,496			1948	2,371
Fitzgerald	Nov. 1945	3,478	24-32	27.5	1		11	12	12			84	1,766	110	1,178	1947	720
Anderson	July 1945	3,784	30-33	31.5		1	5	6	6			22	710	36	778	1946	523
Weston	Sep. 1945	3,026	29-32	29.5			2	2	2			13	935	17	826	1946	347
Weston "B"	Dec. 1945	5,816	26	25.7			1	1	1			11	332	8	156	1946	235
Bolton	Jan. 1946	5,911	33-35	34.0	1				1				71		75	1946	74
Phacoides	Nov. 1946	4,333	28-31	29.0			5	5	5			51	1,038	52	995	1947	828
Oceanic	Nov. 1945	4,912	32-49	37.0	6	5	26	31	37			944	17,332	398	30,705	1948	11,650
Woody	Mar. 1946	5,470	31-48	34.8	1	1	7	8	9			78	630	467	20,325	1947	458
Point of Rocks Fourth	Aug. 1953	4,523	27-28	27.8			3	3	3			82	99	36	44	1954	225
Salt Creek Main Area																	
Carneros	Mar. 1946	2,779	17-24	19.5		17	43	60	60		1	1,131	11,826	(334)	2,279	1947	5,843
Salt Creek West Area					1	2	19	21	22	2	3	131	1,390	26	536		
Salt Creek	Jan. 1946	1,337	12-13	13.0	1		4	4	5	2	2	3	17			1947	9
Carneros	May 1946	2,785	15-18	16.1		1	4	5	5			99	845	84	411	1948	321
Phacoides	June 1949	1,309	17-23	21.3		1	12	13	13		1	69	495	7	125	1951	288
Sheep Springs Area						3	36	39	39	3	9	711	2,788	182			
"54-21"	Dec. 1945	2,297	14-18	17.0		1	29	30	30			130	1,148	30		1948	561
Carneros	Sep. 1944	3,416	20-25	22.0		1	3	4	4	1		18	807	4	86	1945	635
Phacoides	Aug. 1952	4,711	33-34	34.0			2	2	2			88	72	18	53	1953	109
Oceanic	July 1947	4,827	34-43	38.5		1	2	3	3	2		35	348	130	2,854	1948	636
McKITTRICK	1887	1,040	13-16	14.9	57	7	248	312	383	1	126	936	100,401	132		1909	13,171
TREMBLOR RANCH	1900	923	15-16	15.9	11		22	22	33		9	43	530	Included with McKittrick			
MIDWAY-SUNSET					171	189	3,768	3,957	3,972	33	1,099	13,362	798,360	5,633	934,723	Included Buena Vista	
Midway East Area																	
Shallow	May 1901	3,708	18-29	21.2	118	37	829	866	984	13		2,893		2,047		1914	137,057
Lakeview	Mar. 1910	3,084	19-25	22.0	30	2	54	56	86			418	43,891	65		1937	14,885
Gibson	Mar. 1936	2,810	17-23	21.5		4	16	20	20	1		63	2,661	44		1936	1,685
Maricopa Flat	Sep. 1928	3,183	15-25	21.6	12	3	72	75	87	2		217	18,563	188		1930	10,806
Pacific	June 1947	3,836	23-27	24.9			11	11	11			64	708	222		1948	284
Pentland	Apr. 1948	5,161	27-31	29.0			1	1	1			7	24	4		1948	19
Miocene Miscellaneous	Jan. 1953	1,588	23-34	33.1			3	3	3			17	32	74	136	1954	46
Exeter	Sep. 1954	5,605	30-32	31.2			6	6	6			142	142	88	88	1954	390

Significant Statistics

CALIFORNIA FIELDS AND POOLS

CONSERVATION COMMITTEE

	DATE OF DISCOVERY	AVERAGE WELL DEPTH	API GRAVITY RANGE	API GRAVITY APPROX. AVERAGE	NUMBER OF WELLS - DECEMBER 31, 1954 — WELL STATUS RECORD — SHUT-IN STANDING	SHUT-IN IDLE	PRODUCING	TOTAL ACTIVE	TOTAL NO. OF WELLS	ABANDONED 1954	ABANDONED CUMUL. 1-1-55	OIL PRODUCTION THOUSAND BARRELS 1954	OIL PRODUCTION THOUSAND BARRELS CUMULATIVE TO 1-1-55	NET WITHDRAWAL FORMATION GAS (DEDUCTS INJECTED GAS) MILLIONS CU. FT. 1954	NET WITHDRAWAL FORMATION GAS (DEDUCTS INJECTED GAS) MILLIONS CU. FT. CUMULATIVE TO 1-1-55	PEAK PRODUCTION YEAR	PEAK PRODUCTION B/D
San JoaQUIN VALLEY REGION (CONT'D)																	
KERN-TULARE (CONT'D)																	
Midway West Area																	
Upper	May 1901	1,044	11-27	14.3	255	136	2,085	2,221	2,476	17		7,036		1,567	Included with Shallow		
Quality	May 1936	2,303	14-16	15.4	1	3	61	64	65			346	12,903	9		1937	5,149
Ethel D	Nov. 1950	2,958	14-19	18.9			17	17	17			219	524	276	675	1954	379
Republic	Mar. 1928	2,509	15-23	18.5			52	52	52			714		95	Included with Shallow		
General American	Oct. 1952	4,360	21-24	23.0			8	8	8			374	507		151	1954	1,084
Section "6"	June 1943	3,063	22-23	22.5	1		6	6	7			62	1,208	23		1944	699
Santiago Area - Shallow	June 1945	1,121	15	14.6	4		1	1	5			3	9	2		1953	4
- Metson	Mar. 1953	1,898	11-12	11.4		3	5	8	8			40	95			1954	130
- Leuthold's	Aug. 1945	1,321	15-21	18.0		1	35	36	36			754	12,859	749	4,768	1947	4,633
MOUNT POSO GROUP					27	7	562	569	596		29	3,078	121,065	56			
BAKER																	
Vedder	Jul. 1935	1,758	15-16	15.7	2		19	19	21			59	3,023			1937	1,032
DOMINION																	
Vedder	Dec. 1931	1,515	13-16	15.3	2	1	60	61	63			103	3,434			1937	512
DORSEY																	
Vedder	Sep. 1928	1,906	15-16	15.5	2		37	37	39			106	2,161			1943	550
GRANITE CANYON																	
Vedder	July 1936	1,415	13-16	15.0	2		18	18	20			43	580			1949	180
MOUNT POSO					15	5	398	403	418			2,607	110,767	56			
Gill	Jan. 1954	2,162	15	15.4		1	1	2	2			2,605	2			1954	5
Vedder	Jan. 1923	1,782	12-17	16.0	15	4	397	401	416			2	110,765	56		1943	19,550
SECTION "18"																	
Vedder	Feb. 1944	2,387	16-17	15.5	4	1	30	31	35			160	1,192			1948	490
WEST MOUNT POSO	1940	Abandoned											8			1941	11
MOUNTAIN VIEW					35	32	194	226	261	2	99	1,356	58,053	1,567	64,365		
Arvin Area - H.S.J.-2	July 1952	6,004	34-39	36.2		1	22	23	23			271	334	485	678	1954	743
- George	July 1951	6,457	32-35	34.3		2	15	17	17			213	687	394		1951	731
- Others	Dec. 1937	6,886	25-36	33.9	4	7	38	45	49	1		194	4,573	354		1940	1,309
Di Giorgio Area	Nov. 1946	6,601	30	30.0			1	1	1	1		2	100			1949	66
Main Area - Wible (Nosu)	June 1953	7,366	26-34	28.8		1	4	5	5			81	180	96	209	1953	270
- Others	May 1933	5,306	20-34	25.6	31	21	114	135	166			595	52,209	238		1936	25,638
PALOMA					2	9	65	74	76	2	3	1,496	33,394	14,906	181,744		
Main Area																	
Paloma (Crude Oil)	Aug. 1939	11,494	38-42	40.7	1	9	59	68	69	2		1,468	32,776	14,510		1949	14,059
Symons Area - Symons	Apr. 1949	11,416	57-61	58.6	1		5	5	6			9	438	352		1951	296
- Paloma	Dec. 1944	11,856	32	32.3			1	1	1			19	230	44		1949	109
PIETRO CREEK	May 1951	4,215	13-20	18.2	1		14	14	15			153	400	71	148	1952	255
POSO CREEK GROUP					29	11	287	298	327		10	1,323	20,389	131			
EMAS	Dec. 1937	2,069	12-13	12.0	1		14	14	15			23	440			1945	113
McVAN	Mar. 1932	1,359	12-13	12.5	12		16	16	28			26	571			1938	172
PREMIER					16	11	257	268	284			1,274	19,378	131			
Main Area	1933	2,667	11-15	13.5	16	11	257	268	284			1,274	19,375	131		1953	4,708
West Area	June 1946	3,143	Abandoned										3			1947	5
PYRAMID HILLS-BLACKWELL'S CORNER GROUP					92	23	126	149	241	2	71	314	2,225	111			
ALFRITZ						9	40	49	49			203	706	94			
Upper	Dec. 1938	648	15	15.0		5	5	10	10			9	32		3	1954	24
Strode	June 1931	2,055	15-32	19.0		4	23	27	27	2		107	587	15		1953	431
Miller	July 1954	1,805	17-40	30.2			12	12	12			87	87	79	79	1954	227
BLACKWELL'S CORNER																	
Tembler	Nov. 1941	1,716	12-15	12.6	6	1	25	26	32			30	494	5		1944	712
DEVIL'S DEN					77		6	6	83			9	82				
Main	1910	1,431	17	16.5	77		3	3	80			3	76			1943	12
Bates	June 1954	1,783	25	25.0			3	3	3			6	6			1954	17
PYRAMID HILLS					4	3	38	41	45			99	935	12			
Orchard	Nov. 1953	2,957	23-40	34.7		1	2	3	3			6	10			1954	17
Dagany	Feb. 1954	836	16	16.1			12	12	12			37	37	1	1	1954	101
Others	July 1940	2,116	12-17	15.5	4	2	24	26	30			56	888	11		1945	356
WELCOME VALLEY	Feb. 1952	263	11-13	12.0	5	10	17	27	32			3	8			1953	10

Significant Statistics

CALIFORNIA FIELDS AND POOLS

CONSERVATION COMMITTEE

	DATE OF DISCOVERY	AVERAGE WELL DEPTH	API GRAVITY RANGE	API GRAVITY AVERAGE	NUMBER OF WELLS - DECEMBER 31, 1954 WELL STATUS RECORD SHUT-IN STANDING	SHUT-IN IDLE	PRODUCING	TOTAL ACTIVE	TOTAL NO. OF WELLS	ABANDONED 1954	ABANDONED CUM. 1-1-55	OIL PRODUCTION (THOUSAND BARRELS) 1954	OIL PRODUCTION (THOUSAND BARRELS) CUMULATIVE TO 1-1-55	NET WITHDRAWAL FORMATION GAS (MILLIONS CU. FT.) 1954	NET WITHDRAWAL FORMATION GAS (MILLIONS CU. FT.) CUMULATIVE TO 1-1-55	PEAK PRODUCTION YEAR	PEAK PRODUCTION B/D
SAN JOAQUIN VALLEY REGION (CONT'D)																	
RIO BRAVO																	
Rio Bravo-Vedder	Nov. 1937	11,465	34-44	40.6		24	82	106	106		1	4,312	72,443	2,140	59,531		
Nebbling	Aug. 1953	11,699	34-37	36.5			2	2	2			69	104	29	41	1954	190
RIO VERDE																	
Stevens	Sep. 1951	5,985	26-36	32.2			19	19	19	1	5	518	1,258	646	1,289	1954	1,446
ROUND MOUNTAIN GROUP					16	10	375	385	401	1	33	1,794	67,660	47			
ALMA																	
Vedder	Feb. 1947	2,769	12-14	13.0			10	10	10			20	373			1948	32
COFFEE CANYON																	
Vedder	May 1927	1,616	15-19	16.9	4	2	85	87	91	1		304	15,764	1		1937	4,957
PYRAMID																	
Vedder	May 1937	1,689	16-17	16.7			53	53	53			129	4,319			1946	1,036
ROUND MOUNTAIN					7	3	179	182	189			1,141	43,891	44			
Jewett	Apr. 1928	1,765	18-23	21.3	2	1	44	45	47			130	4,547			1939	1,303
Vedder	May 1927	1,984	13-25	16.4	5	2	135	137	142			1,011	37,344	44		1938	6,703
SHARKTOOTH																	
Vedder	Sep. 1943	2,610	12-16	13.0	5	5	48	53	58			200	3,213	2		1947	1,397
STRAND					1		12	12	13		1	84	5,670	76	25,385		
Stevens Upper	Aug. 1939	8,037	32-35	34.0	1		9	9	10			38	3,142	47	23,750	1940	1,297
Stevens Lower	June 1939	8,531	33-35	34.2			3	3	3			46	2,528	29	1,635	1944	1,038
STRAND EAST																	
Stevens	Nov. 1948	8,197	36-38	36.6			7	7	7			111	1,877	89	1,783	1945	716
TEJON GROUP					15	15	378	393	408	8	32	2,418	14,926	983			
COMANCHE POINT	Apr. 1945	620	13-14	13.5			11	11	11			7	54			1948	68
TEJON FLATS	Mar. 1953	6,919	30	30.3			1	1	1			5	9	1	2	1954	14
TEJON-GREPEVINE					6	7	150	157	163	1		1,276	8,169	817			
Central Area - S-P	Nov. 1944	2,967	17-22	18.3	3	4	26	30	33	1		143	980	92		1953	479
- Reserve	June 1935	4,470	18-32	21.5	1	1	10	11	12			112	909	34		1951	468
- V	Dec. 1951	4,861	18-33	30.9			11	11	11			169	417	774	982	1953	546
- Olcese	May 1954	5,732	27-30	29.7			15	15	15			247	247	357	357	1954	677
- Transition	Dec. 1954	2,805	18	18.0			1	1	1			1	1			1954	1
- W. V.*	Dec. 1954	7,039	40	40.3			1	1	1			11	11	6	6	1954	29
Eastern Area	Nov. 1943	2,336	17-19	18.0	1		18	18	19			46	844	132		1947	325
Western Area - S	Dec. 1945	2,654	14-17	15.8	1	2	67	69	70			521	4,972	155		1947	2,697
- Reserve	Nov. 1949	4,756	19	19.5			1	1	1			6	29	7		1953	21
TEJON HILLS					9	8	216	224	233	7		1,130	4,458	165			
S	July 1948	540	26-31	28.9	6	7	169	176	182	5		745	4,587	27		1953	2,905
V	Feb. 1950	1,028	25-31	29.6	3	1	26	27	30			222	1,131	81		1952	1,043
T	July 1950	1,888	31-34	33.0			21	21	21	2		143	716	57		1952	537
TEN SECTION						20	111	131	131		3	1,238	54,946	1,043	112,836		
Stevens	July 1936	8,494	32-38	36.0		20	104	124	124			1,197	54,353	1,028	111,988	1943	17,966
53	Sep. 1947	8,819	34-38	36.5			7	7	7			41	593	15	848	1949	904
WASCO					2		3	3	5		8	34	5,011	230	2,984		
Vedder	Apr. 1938	13,052	34	34.3	2		2	2	4			6	4,765	9	1,736	1944	2,246
Eocene	Sep. 1949	15,530	46	46.1			1	1	1			28	241	221	1,188	1950	170
Shale	Apr. 1937	9,591	Abandoned										5			1940	3
WHEELER RIDGE						3	88	91	91		2	1,844	8,668	2,694			
Coal Oil Canyon	May 1948	1,309	18-23	22.3			23	23	23			138	1,120	37	247	1950	572
Main	Nov. 1922	2,834	19-31	22.6		3	32	35	35			96	4,966	60		1947	1,027
24-28	Nov. 1953	3,645	30-32	30.6			2	2	2			52	56	70	73	1954	148
Gordon	Sep. 1953	3,786	33-35	33.8			7	7	7			268	346	157	196	1954	736
2-30	Mar. 1952	4,806	30-40	30.8			3	3	3			55	108	54	129	1954	150
27S-29	Aug. 1953	6,575	42-45	44.0			4	4	4			33	50	216	287	1954	91
Eocene	Apr. 1952	10,215	34-39	36.3			16	16	16			1,210	2,012	2,086	3,637	1954	3,317
SB-2	Aug. 1954	9,960	36	35.7			1	1	1			10	10	14	14	1954	27

Significant Statistics

CALIFORNIA FIELDS AND POOLS

CONSERVATION COMMITTEE

	DATE OF DISCOVERY	AVERAGE WELL DEPTH	API GRAVITY RANGE	API GRAVITY AVERAGE	NUMBER OF WELLS - DECEMBER 31, 1954 WELL STATUS RECORD SHUT-IN STANDING	SHUT-IN IDLE	PRODUCING	TOTAL ACTIVE	TOTAL NO. OF WELLS	ABANDONED 1954	ABANDONED CUMUL. 1-1-55	OIL PRODUCTION THOUSAND BARRELS 1954	OIL PRODUCTION THOUSAND BARRELS CUMULATIVE TO 1-1-55	NET WITHDRAWAL FORMATION GAS (DEDUCTS INJECTED GAS) MILLIONS CU. FT. 1954	NET WITHDRAWAL FORMATION GAS (DEDUCTS INJECTED GAS) MILLIONS CU. FT. CUMULATIVE TO 1-1-55	PEAK PRODUCTION YEAR	PEAK PRODUCTION B/D
SAN JOAQUIN VALLEY REGION (CONT'D)					10	10	58	68	78	1	16	661	2,774	626			
OVER VIEW																	
CALDER																	
Stevens	May 1949	8,825	37-38	37.6			2	2	2		1	25	217	30	312	1950	143
CHENEY RANCH	Jan. 1941	7,277	27	27.0	1				1				13			1941	10
CHICO-MARTINEZ	Feb. 1938	1,060	12-24	13.9	2		6	6	8		2	6	61			1938	22
CIERVO	July 1948	1,147	15-25	21.9	1		5	5	6			5	29			1952	22
DEER CREEK	Nov. 1930	957	13-17	17.6	1	3	7	10	11			43	64			1954	118
DYER CREEK	Sep. 1941	2,305	17	17.1	Abandoned					1	1		38			1942	44
GOOSLOO	Jan. 1952	10,063	36	36.0	Abandoned						1		2			1952	6
HANFORD	July 1950	5,404	20	20.0	Abandoned						1		4			1950	9
JASMIN	July 1946	2,809	12-17	14.5	2	4	5	9	11		3	21	365			1948	178
KRETZMACHER					2				2								
McCLURG	Sep. 1943	7,694			Abandoned						1		106			1944	130
ROSEDALE RANCH	Mar. 1945	4,355	16-21	17.9		1	28	29	29		3	504	882	398	762	1954	1,380
SAN EMIDIO																	
Miocene	Mar. 1948	1,482	28	28.0	Abandoned						1		2			1948	2
SHAFTER	Oct. 1931	12,875			Abandoned						1		55			1952	58
TERRA BELLA	June 1930	Suspended Well				1		1	1				See Deer Creek				
TURK ANTICLINE	July 1940	8,390	62	62.9		1	1	2	2			4	37	138		1953	22
UNION AVENUE	Jan. 1941	5,303	15	15.3	1		3	3	4		1	32	846	60		1946	380
VALLECITOS	Dec. 1944	803	34	35.6			1	1	1			1	3			1952	3
SAN JOAQUIN VALLEY REGION TOTAL					1,802	2,707	16,793	19,500	21,302	123	4,014	146,696	4,373,816	145,371			
COASTAL REGION																	
SANTA BARBARA DISTRICT																	
CAPTAIN					6	1	68	69	75		1	390	16,325	274	11,720		
Vaqueros	Oct. 1949	1,476	19-23	21.8	1	1	37	38	39			174	10,384	72	3,453	1943	3,105
Arbura	Jan. 1931	2,723	24-45	41.5	5		13	13	18			22	2,331	37	4,270	1935	1,261
Cowerrubias	Feb. 1945	3,537	38-42	39.5			17	17	17			182	3,236	156	3,786	1946	1,728
Goldwater	Aug. 1945	3,892	39	38.9			1	1	1			2	374	9	211	1947	140
COAL OIL POINT	Aug. 1928	10,047			Abandoned					2	2		1			1928	2
ELWOOD					19	2	60	62	81	5	31	1,436	94,750	695	77,627		
Vaqueros	July 1928	3,713	28-36	35.0	19	1	52	53	72	4		1,401	91,316	610	72,380	1930	40,069
Sespe	Oct. 1931	5,242	33-38	36.9		1	8	9	9	1		35	3,293	85	55,247	1936	2,705
GOLETA	Feb. 1927				Abandoned								141				
SANTA BARBARA (MESA)																	
Vaqueros	May 1929	1,913	17-18	17.0	1		5	5	6		16	6	3,644			1935	2,027
SUMMERLAND	1894	1,228	17-19	18.7	6	1	1	2	8	7	398	3	3,198			1899	571
SANTA CLARA VALLEY DISTRICT																	
SISO CANYON					2	21	104	125	127		2	2,790	21,554	2,576			
Aliso	Apr. 1950	4,160	12-17	16.5		1	16	17	17			375	1,675	76	431	1952	1,476
Aliso West	Nov. 1950	5,558	13	12.8			1	1	1			5	19	2	13	1952	15
Porter	Oct. 1938	5,649	14-25	23.5		5	21	26	26			516	7,260	367	3,899	1941	2,561
Del Aliso	Sep. 1947	7,031	19-26	25.1			16	16	16			568	2,151	461	1,877	1954	1,540
Mission-Adrian	Sept.1951	7,320	34	34.0	1		1	1	2			2	9	42	149	1952	8
Sesnon	Mar. 1940	8,446	19-28	27.3	1	15	45	60	61			1,286	10,294	1,597	20,095	1953	3,579
Faulted Sesnon	July 1944	8,347	20-24	22.2			2	2	2			9	93	9		1951	32
Tyee	Dec. 1941	8,957	20-21	20.9			2	2	2			35	53	22		1954	95
BANDSDALE					12	3	93	96	108		14	461	6,780	1,958			
Elkins	Feb. 1943	5,765			Abandoned								34			1943	24
Sespe	1894	4,199	17-32	27.2	10	3	60	63	73			115	3,033	367		1949	610
Eocene	1937	6,628	30-37	33.6	2		33	33	35			326	3,213	1,591		1951	1,250
BLACK RANCH	Feb. 1946				Abandoned						2		2			1946	4
CANOGA PARK	Apr. 1952	1,121	32	32.0			1	1	1				1			1953	1
CASCADE	Nov. 1924	2,759	23	22.6			1	1	1			3	3	1	1	1954	10

Significant Statistics

CALIFORNIA FIELDS AND POOLS

CONSERVATION COMMITTEE

	DATE OF DISCOVERY	AVERAGE WELL DEPTH	API GRAVITY RANGE	API GRAVITY APPROX. AVERAGE	NUMBER OF WELLS - DECEMBER 31, 1954 WELL STATUS RECORD SHUT-IN STANDING	SHUT-IN IDLE	PRODUCING	TOTAL ACTIVE	TOTAL NO. OF WELLS	ABANDONED 1954	ABANDONED CUM. 1-1-55	OIL PRODUCTION (DEDUCTS INJECTED GAS) THOUSAND BARRELS 1954	OIL PRODUCTION (DEDUCTS INJECTED GAS) THOUSAND BARRELS CUMULATIVE TO 1-1-55	NET WITHDRAWAL FORMATION GAS MILLIONS CU. FT. 1954	NET WITHDRAWAL FORMATION GAS MILLIONS CU. FT. CUMULATIVE TO 1-1-55	PEAK PRODUCTION YEAR	PEAK PRODUCTION B/D
COASTAL REGION (CONT'D)																	
SANTA CLARA VALLEY DISTRICT (CONT'D)																	
CASTAIC HILLS																	
Sterling	Sep. 1951	5,978	30-36	32.0		3	56	59	59			1,271	3,806	2,925	6,904		
Byrne-Fisher	Sep. 1951	6,009	34	34.3		3	55	58	58			1,201	3,786	2,910	6,559	1953	4,084
						1	1	2	2			20	20	15	15	1954	54
CASTAIC JUNCTION						3	35	38	38			1,117	2,804	896	2,790		
"20"	Dec. 1950	10,768	18-21	19.1		3	27	30	30			838	2,145	41	594	1954	2,297
"19"	Jan. 1952	10,878	29-32	30.4			4	4	4			216	399	395	713	1954	590
"21"	Jan. 1950	11,597	31-46	42.6			4	4	4			63	260	460	1,483	1953	194
CONEJO	1952	152	14-16	15.8	5	1	5	6	11				106			1951	2
DEL VALLE						1	80	81	81	9	11	1,070	18,031	5,137	41,069		
East Area																	
Sherman	Jan. 1961	6,090	31-34	32.7		1	6	7	7	1		50	2,643	211	4,084	1961	1,333
Del Valle	Sep. 1960	7,095	31-37	33.1			16	16	16			296	3,300	1,184	11,467	1951	1,308
Del-Elk	Feb. 1944	8,297	40	40.0			1	1	1			4	62	62	1,111	1945	67
Bering	Feb. 1943	8,674	30-37	33.5			7	7	7			95	1,193	112	6,954	1951	552
Lincoln	Aug. 1947	11,112	34-40	36.9			5	5	5			110	607	464	2,576	1953	305
Kinler Area - Del Valle	Mar. 1950	7,193	19-20	19.6			4	4	4			19	151	8	89	1951	120
South Area	July 1951	8,897	33	32.8			1	1	1			6	35	6	50	1952	33
West Area																	
Pliocene Gas Sands	Oct. 1950	4,747	66-68	67.5	As of 7/1/54 reclassified as dry gas zone					8		6	28	1,281	4,638	1952	30
S. L. F. 3-1	June 1944	4,982	27	27.0			1	1	1			2	47	4	42	1945	23
"P-60" (Pliocene)	Apr. 1954	5,079	37	36.5			1	1	1			47	47	156	156	1954	129
Sepulveda	Aug. 1942	5,325	33-35	34.0			5	5	5			44	918	137	4,571	1946	424
Vasquez "13"	June 1945	5,733	25-35	34.6			5	5	5			142	1,574	128	1,507	1946	538
Vasquez-Videgain	July 1951	5,946	31-36	33.5			15	15	15			153	6,518	459	19,775	1945	2,951
Vasquez "31"	Apr. 1948	6,715	25-35	33.0			13	13	13			76	763	185	4,079	1951	806
ELIZABETH CANYON	Mar. 1952	1,288	40	40.4	2				2		1					1954	
FILLMORE																	
Spalding	Apr. 1954	14,313	28-29	28.8			2	2	2			130	130	139	139	1954	356
HARLEY CANYON	Jan. 1945	3,900	Abandoned								1		11			1946	9
HONOR RANCHO						3	19	22	22			1,045	3,984	949	4,177		
Rancho	Aug. 1950	4,829	34-38	35.4			7	7	7			168	750	110	1,188	1952	546
Weyrich	Dec. 1950	6,384	30-36	35.2		3	12	15	15			877	3,234	559	2,989	1953	3,327
HORSE MEADOWS	July 1952	4,610	24	24.0			1	1	1			8	23	6	17	1953	27
LAS LLAJAS																	
Rocque	1945	977	26	26.3			2	2	2			3	71	1		1951	13
MISSION							3	3	3			80	105	35	59		
"5-1"	Dec. 1953	6,195	27	27.3			1	1	1			63	69	18	21	1954	172
"6-1"	Mar 1953	7,619	23-29	24.5			2	2	2			19	36	17	38	1954	54
MONTALVO WEST					1	8	18	20	21			139	2,087	889	5,714		
McGrath	Apr. 1947	9,320	22-34	29.7	1	1	13	14	15			144	1,660	794	5,571	1952	830
Colonia	Feb. 1951	12,438	13-27	22.3		1	5	6	6			25	377	95	143	1954	195
NEWHALL GROUP					75		47	47	122		58	104	7,719	21			
DeMITT CANYON	1882																
ELSMERE	1889	2,068	18	17.7	16		1	1	17			1	Included with Newhall Group				
FICO CANYON	1875	957	31-39	37.6	30		11	11	41			10	21 Included with Newhall Group				
RICE CANYON	1899	893	Abandoned														
TOWNSITE	Dec. 1948	1,957	19-22	20.3	1		4	4	5			6	43			1952	40
TOWSLEY CANYON	1930	2,781	16-24	20.8	7		5	5	12			2			Included with Newhall Group		
TUNNEL		1,486	13-21	18.3	8		26	26	34			85			Included with Newhall Group		
WHITNEY CANYON	1893	1,057			2				2						Included with Newhall Group		
WILEY CANYON	1887	3,920			11				11						Included with Newhall Group		
NEWHALL-POTRERO						30	107	137	137			3,958	35,149	1,824	28,288		
1-2-3	Mar. 1937	7,475	26-39	34.5		25	50	75	75			1,279	24,173	1,818	18,302	1948	5,510
5th	June 1946	9,527	26-42	34.0		2	35	37	37			893	6,560	(534)	4,581	1951	3,316
6th	Mar. 1945	10,336	31-41	37.5		2	10	12	12			609	3,708	105	3,828	1954	1,668
7th	Apr. 1948	11,099	30-33	31.3		1	11	12	12			769	1,478	425	830	1954	2,106
9th	Dec. 1948	13,648	24	23.8			1	1	1			8	50	10	767	1951	25

Significant Statistics

CALIFORNIA FIELDS AND POOLS

CONSERVATION COMMITTEE

	DATE OF DISCOVERY	AVERAGE WELL DEPTH	API GRAVITY APPROX. RANGE	API GRAVITY APPROX. AVERAGE	NUMBER OF WELLS - DECEMBER 31, 1955 — WELL STATUS RECORD: SHUT-IN PRODUCING	SHUT-IN IDLE	PRO-DUCING	TOTAL ACTIVE	TOTAL NO. OF WELLS	ABANDONED CUMU. 1954	ABANDONED CUMU. 1-1-55	OIL PRODUCTION (INCLUDES INJECTED GAS) THOUSAND BARRELS CUMULATIVE 1954	OIL PRODUCTION (INCLUDES INJECTED GAS) THOUSAND BARRELS CUMULATIVE TO 1-1-55	NET WITHDRAWAL FORMATION GAS MILLIONS CU. FT. CUMULATIVE 1954	NET WITHDRAWAL FORMATION GAS MILLIONS CU. FT. CUMULATIVE TO 1-1-55	PEAK PRODUCTION YEAR	PEAK PRODUCTION B/D
COASTAL REGION (CONT'D)																	
SANTA CLARA VALLEY DISTRICT (CONT'D)																	
OAK CANYON							20	20	20		4	419	4,793	705			
1-A	Feb. 1911	2,679	25-29	26.5			5	5	5			14	218	25		1948	78
3-AB	Jan. 1944	6,618	23-28	26.5			3	3	3			74	1,601	69	2,243	1945	787
4-AB	Jan. 1945	6,803	30-33	32.0			2	2	2			60	634	111	683	1945	234
5-A	Feb. 1941	7,233	32-35	33.5			8	8	8			203	3,615	375	4,574	1948	955
6-AB, 7 & 8-AB	June 1945	9,811	32-35	33.2			2	2	2			68	735	125		1948	266
OAKRIDGE																	
Miocene	Aug. 1952	2,954	16-22	20.4		2	39	41	41			1,003	2,416	716	1,820	1953	3,357
OAT MOUNTAIN																	
Wygal	May 1946	9,268	19	19.1			1	1	1			13	65	16		1953	43
OJAI GROUP					23	23	67	90	113		88	186	4,622	188			
LION MOUNTAIN																	
Basyn	1949												78				
Eocene	May 1935	2,645	25-29	28.0			6	6	6		8	14	80	2		1950	55
SISAR-SILVERTHREAD	1885	963	11-30	17.0	11	5	59	64	75		71	42	3,273		Included with	Newhall Group	
SULPHUR MOUNTAIN	Nov. 1927	1,927	16	16.0	1			1	1				96			1945	32
SULPHUR MOUNTAIN NORTH	1912	4,744	16-24	21.0	7	14	2	16	23		1	130	990	146		1948	404
TIP-TOP	1918	814	24	24.0	4	4		4	8		8		105		Included with	Newhall Group	
OXNARD					2	6	24	30	32		2	766	5,790	512			
Miocene	June 1937	2,990	6- 9	6.9	2	5	15	20	22			549	5,522	270		1952	1,708
Melonis	July 1953	6,689	20-30	27.8			2	2	2			31	42	18	21	1954	85
Lucas	May 1954	9,025	30	30.1		1		1	1			1	1	2	2	1954	4
Livingston	Mar. 1954	9,707	32-38	32.7			7	7	7			185	185	222	222	1954	506
PIRU GROUP					19	13	69	82	101	1	73	782	8,432	186			
EUREKA	1888	225	21-27	22.6	2	8		8	10		32				Included with	Newhall Group	
HOLSER CANYON	July 1942	5,139	24-28	27.0			6	6	6		3	33	200	6		1953	97
HOPPER CANYON	1897	1,882	16-33	27.8	5	3	20	23	28		22	60	1,828	74		1946	178
MODELO	1897	2,050	24-27	26.0	9	1	9	10	19		5	2	379			1936	13
NICHOLS CANYON											10		10				
TAPO CANYON	Jan. 1951	1,363	16-24	22.0	2	1	13	14	16			41	1,077				
TEMESCAL	Nov. 1924	2,965	21-23	22.9	1		21	21	22	1	1	116	4,938	106		1944	900
PLACERITA					51	11	327	343	398	5	45	2,171	23,306	262			
Juanita Area	Mar. 1919	1,853	18-23	20.1	38	9	136	145	183	4		1,161	16,306	19	6,458	1950	12,983
Old Area	July 1920	1,442	9-18	12.7	13	5	191	196	209	1		1,010	7,000	243		1952	4,293
RAMONA					2	1	123	124	126		1	863	12,573	2,585	17,771		
Black	June 1946	2,379	18-26	23.5		1	9	10	10			51	804	89	916	1947	500
Kern-Del Valle	Nov. 1943	4,337	14-29	21.0	2		114	114	116			812	11,769	2,496	16,808	1949	5,274
SANTA PAULA GROUP	1875				15	5	55	60	75		108	320	3,932	283	Included with	Newhall Group	
ADAMS CANYON	1900		25	24.8	1		5	5	6			3		1			
ALISO CANYON (OLD)																	
SALT MARSH CANYON	1900																
SANTA PAULA CANYON	1875	2,024	18-24	21.9	8	5	18	20	28			8		1			
TIMBER CANYON					2		31	31	33			305	1,767	280			
Main	1885	3,576	33-37	35.2	2		30	30	32			293	1,755	271		1954	802
Lowe-Maxwell	Dec. 1953	8,560	38	37.7			1	1	1			12	12	9	10	1954	32
WHEELER CANYON	1900		29	28.8	4		4	4	8			4		1			
SESPE CANYON GROUP	1869				15	3	38	39	54		105	75	4,279	15		1937	291
FOOT OF THE HILL		1,976	19-23	20.0	3		8	9	12			36					
LITTLE SESPE CREEK	1894	1,749	25	25.0	4		6	6	10			9		2			
SECTIONS 23 & 26	1908	856	18	11.8	1	2	4	6	7			4					
TAR CREEK		1,044	26-31	27.6	3	1	13	14	17			15		9			
TOPA-TOPA	1887	1,639	32-34	32.7	4		4	4	8			9		4			
SHIELLS CANYON					22	2	162	164	186	1	26	380	15,818	522			
Basolo	Aug. 1952	3,466	20-31	28.0	2		14	16	16			140	273	107	163	1954	382
Sespe	Apr. 1911	2,019	21-35	30.2	22		148	148	170	1	26	240	15,545	415	Included with	Newhall Group	

Significant Statistics

CALIFORNIA FIELDS AND POOLS

CONSERVATION COMMITTEE

	DATE OF DISCOVERY	AVERAGE WELL DEPTH	API GRAVITY RANGE	API GRAVITY AVERAGE	NUMBER OF WELLS - DECEMBER 31, 1954 — WELL STATUS RECORD: SHUT-IN STANDING	SHUT-IN IDLE	PRODUCING	TOTAL ACTIVE	TOTAL NO. OF WELLS	ABANDONED 1954	ABANDONED CUMU. 1-1-55	OIL PRODUCTION (DEDUCTS INJECTED GAS) THOUSAND BARRELS 1954	OIL PRODUCTION (DEDUCTS INJECTED GAS) THOUSAND BARRELS CUMULATIVE TO 1-1-55	NET WITHDRAWAL FORMATION GAS MILLIONS CU.FT. 1954	NET WITHDRAWAL FORMATION GAS MILLIONS CU.FT. CUMULATIVE TO 1-1-55	PEAK PRODUCTION YEAR	PEAK PRODUCTION B/D
COASTAL REGION (CONT'D)																	
SANTA CLARA VALLEY DISTRICT (CONT'D)																	
MIMI																	
Sespe-Eocene	1912	1,250	15-43	26.8	5	1	68	69	74		4	55	2,276	7	Included with Newhall Group		
SOUTH MOUNTAIN																	
Sespe	Apr. 1916	4,406	25-28	23.5	2	5	352	357	359	1	21	5,241	49,851	6,744		1954	14,435
TAPO CANYON SOUTH						1	28	29	29		1	753	1,668	500	695		
McDonald	Mar. 1948	543	Abandoned														
Terry	Feb. 1953	2,432	25-33	30.9		6	17	23	23			741	1,665	279	474	1953	2,502
Sespe	July 1954	2,376	17-21	19.1		1	5	6	6			12	13	21	21	1954	34
TORREY CANYON					13	3	66	69	82		13	1,302	8,161	1,153			
Upper Sespe	1896	1,419	20-31	27.5	13	3	52	55	68			103	6,252	84		1947	609
Lower Sespe	May 1952	9,832	18-36	26.4			14	14	14			1,199	2,209	1,069	1,637	1954	3,265
WELDON CANYON	June 1951	3,750	28-30	29.1			2	2	2			43	115	23	56	1954	118
WEST MOUNTAIN																	
Sespe	Feb. 1945	5,003	18-27	19.8	4		26	26	30		2	159	1,716	173		1948	974
SANTA MARIA DISTRICT																	
ORCUTT																	
Nov. 1943	4,831	13-15	13.6	3				3				9				1947	5
CAYUCOS	Aug. 1952	4,975	31	31.0	Abandoned					2	2	5			5	1953	3
CASMALIA					24	14	56	70	94	3	55	681	17,735	220		1953	5,733
Sisquoc-Monterey	1904	2,395	7-28	20.0	24	14	54	68	92	3		672	17,600	167		1954	1,838
Arellanes	Apr. 1946	5,035	19-33	20.8			2	2	2			10	135	53		1946	105
CAT CANYON GROUP					34	37	356	373	407	5	68	7,345	99,988	3,533			
BRADLEY CANYON											2		26			1945	57
Sisquoc-Monterey	Feb. 1943	4,704	Abandoned														
CAT CANYON EAST																	
Sisquoc-Monterey	1908	3,277	6-17	10.5	11	5	8	13	24		11	62	4,953	6		1945	821
CAT CANYON WEST					19	24	273	297	316	5	48	6,003	71,832	3,159			
Pliocene	1908	3,082	14-40	15.2	19	6	78	84	103	2		1,043	25,979	582		1952	3,990
Alexander	Mar. 1953	3,890	20-24	22.6		2	25	27	27	2		648	1,390	308	662	1953	3,733
Thomas	Nov. 1954	4,814	18	17.8			1	1	1			3	3			1954	4
Los Flores	Aug. 1938	6,183	11-22	14.9		16	169	185	185	1		4,333	44,440	2,269	10,685	1952	14,116
GATO RIDGE						8	43	51	51		3	973	21,656	368		1946	4,846
Tognazzini	June 1931	3,618	10-17	12.5			12	12	13		4	187	1,524			1953	1,013
OLIVERA CANYON	June 1944	5,017	6- 7	6.0	1				1				17			1944	22
TINAQUAIC	Jan. 1945	4,183	7- 8	7.0	3				3								
FOUR DEER	Oct. 1944	5,288	29-33	30.3			12	12	12		2	40	831	154	1,273	1948	679
GUADALUPE																	
Sisquoc-Knoxville	June 1948	2,798	8-44	11.2	2	1	39	40	45	2	3	874	2,268	607	805	1953	2,114
JESUS MARIA	Sep. 1952	3,572	14	14.0		5		5	5			2	51			1953	120
LOMPOC																	
Monterey	Feb. 1903	2,790	14-26	19.8	4	20	104	124	130		20	1,493	25,737	1,326		1951	6,799
ORCUTT	1903	3,578	17-30	22.7	54	7	266	273	289		42	1,265	116,096	2,177	111,380	1908	23,769
SANTA MARIA VALLEY					36	34	426	460	496	5	49	3,680	117,999	6,912	134,598		
Main	Sep. 1934	4,753	6-40	14.5	36	33	421	454	490	5	49	3,685	117,689	6,859	134,277	1945	36,923
Nook	Feb. 1952	5,925	9-10	9.7		1	5	6	6			195	510	53	321	1953	628
YAKA CREEK																	
Monterey	Mar. 1945	5,095	7-14	9.1	1	1	43	44	45		1	1,709	8,730	500	868	1954	4,682
VENTURA DISTRICT																	
HONOR					5	8	234	242	247	5	32	3,253	52,500	6,066	43,758		
Main Area																	
Hobson-Tognazzini-Miley	Dec. 1927	3,059	26-32	30.0	5	2	125	127	132	5		1,199	31,693	1,472		1945	4,504
C-9	Aug. 1941	9,888	24-27	25.6			18	18	18			318	1,571	267		1954	872
Oak Grove Area	Dec. 1937	7,781	29-33	30.5		3	39	42	42			442	9,272	2,469	23,804	1950	3,515
Padre Canyon Area - Others	1951	5,450	29-32	31.0		2	51	53	53			1,046	9,943	1,834	18,938	1954	2,918
- "2-35"	Oct. 1953	12,193	25	25.0		1	1	2	2			79	48	24	32	1954	79
Teak Vapors															82		

Significant Statistics

CALIFORNIA FIELDS AND POOLS

CONSERVATION COMMITTEE

	DATE OF DISCOVERY	AVERAGE WELL DEPTH	API GRAVITY RANGE	API GRAVITY AVERAGE	NUMBER OF WELLS - DECEMBER 31, 1954 WELL STATUS RECORD SHUT-IN STANDING	SHUT-IN IDLE	PRO-DUCING	TOTAL ACTIVE	TOTAL NO. OF WELLS	ABANDONED 1954	ABANDONED CUM. 1-1-55	OIL PRODUCTION (DEDUCTS INJECTED GAS) THOUSAND BARRELS 1954	OIL PRODUCTION (DEDUCTS INJECTED GAS) THOUSAND BARRELS CUMULATIVE TO 1-1-55	NET WITHDRAWAL FORMATION GAS MILLIONS CU. FT. 1954	NET WITHDRAWAL FORMATION GAS MILLIONS CU. FT. CUMULATIVE TO 1-1-55	PEAK PRODUCTION YEAR	PEAK PRODUCTION B/D
COASTAL REGION (CONT'D)																	
VENTURA DISTRICT (CONT'D)																	
SAN MIGUELITO						9	105	114	114			1,990	36,608	10,012	100,972		
First Grubb	Nov. 1931	6,094	28-33	31.0		3	48	51	51			755	20,808	3,898	58,404	1944	5,066
Second Grubb	Apr. 1944	8,289	30-33	31.0		4	34	38	38			797	11,924	4,049	33,388	1951	5,758
Third Grubb	Nov. 1949	9,004	30-33	31.0		2	23	25	25			438	3,876	1,065	9,179	1952	4,304
VENTURA					16	43	1,009	1,052	1,068	12	113	31,179	509,707	58,674	1,332,108		
A-3, B-3	Oct. 1922	5,459	23-36	29.0		1	35	36	36			410	26,175	1,230	82,475	1932	4,388
B-1, 2	Apr. 1930	4,371	28-32	29.5	1		10	10	11			68	1,161	204	3,908	1949	379
B-4, 5 South	Aug. 1951	8,112	30	30.1			1	1	1			28	200	96	529	1952	204
B-4, 5 West	Feb. 1934	7,762	29-33	31.5		4	25	29	29			469	8,665	2,638	24,771	1949	3,981
B-6 South	July 1951	9,060	30	30.2			1	1	1			13	63	63	143	1952	57
"C" Block	Mar. 1922	6,418	24-34	29.5	4	8	255	263	267	11		3,150	238,786	6,491	814,162	1930	45,323
C-1, 2 West	Sept. 1933	6,090	29-31	30.6			16	16	16			352	4,741	613	7,784	1949	1,476
C-3 West	May 1933	7,830	25-33	30.5		7	31	38	38			541	15,307	1,875	58,036	1941	5,051
B-3	July 1934	7,507	28-33	29.9	3		27	27	30			263	6,395	412	12,716	1944	1,535
B-4	Mar. 1932	8,875	29-33	30.0	2		10	10	12			101	1,574	338	2,947	1942	337
B-5 West	Jan. 1934	8,527	23-34	32.0		3	74	77	77			1,152	32,732	7,613	87,290	1939	7,685
B-5, 6 East	Aug. 1931	11,319	27-34	32.1		4	123	127	127			3,385	51,371	8,979	99,884	1944	9,154
B-5, 6 North	Mar. 1942	11,131	24-32	30.5	2	2	133	135	137	1		8,019	30,226	11,771	34,695	1954	21,969
B-6 West	May 1935	9,383	26-32	31.0		2	48	50	50			1,195	13,329	3,873	27,145	1952	3,172
B-7 (8)	May 1935	11,873	25-35	32.1	4	12	220	232	236			11,983	78,982	11,963	73,109	1954	32,330
Tank Vapors														564	2,523		
OTHER COASTAL DISTRICTS																	
SAN LUIS OBISPO COUNTY DISTRICT																	
EDNA (AROYO GRANDE)					24	3	21	24	48	1	32	40	1,790				
Tiber Area	1911	1,265	13-14	13.7	21	2	17	19	40	1		29	1,537			1936	151
Oak Park Area	May 1935	2,865	16-21	16.7	3	1	4	5	8			11	253			1936	117
HUASNA	July 1928	5,593		Abandoned									11				
SANTA CRUZ DISTRICT																	
SANTELEN	Aug. 1950	2,083	22	22.0		2		2	2				6			1952	5
MOODY GULCH-LOS GATOS	1880	980	24	25.5		1	1	2	2				125	Data Unavailable			
SARGENT	1886	832	17-18	17.4			2	2	2			1	784	Data Unavailable			
SONOMA COUNTY DISTRICT																	
PETALUMA	Apr. 1948	1,061	17-20	20.0	3		1	1	4			1	9			1948	6
SALINAS VALLEY DISTRICT																	
KETTLEMAN	May 1952	1,629	24-25	25.1	1	1	6	7	8	2	2	16	47			1953	67
MEADOW	Aug. 1948	1,158		Abandoned												1948	1
SAN ARDO						20	472	492	492	1	1	11,172	34,971	5,046	7,366		
Campbell Area - Lombardi	Nov. 1947	2,110	10-13	11.1		13	288	301	301	1		6,532	21,512	1,574	2,896	1953	19,139
- Aurignac	Dec. 1948	2,342	10-14	11.9		7	175	182	182			4,602	12,574	3,424	4,279	1954	17,608
Superior Area - Aurignac	Mar. 1949	2,695	12-13	12.5			9	9	9			38	185		1	1952	142
Tank Vapors														48	190		
SAN MATEO COUNTY DISTRICT																	
HALF MOON BAY	1886	2,000		Abandoned									41	Data Unavailable			
COASTAL REGION TOTAL:					511	362	5,302	5,664	6,175	69	1,472	92,598	1,396,967	128,123			
LOS ANGELES REGION																	
ALAMITOS	Aug. 1946	9,193	27-29	27.5			5	5	5			77	1,349	66	815	1947	268
BAND INT	Sep. 1953	5,946	40-42	41.0			6	6	6			165	190	366	484	1954	451
BEVERLY HILLS						2	3	5	5			31	4,214	32			
20th Century-Fox	Feb. 1954	7,137	24	24.0			2	2	2			3	3	28	28	1954	7
Wolfskill	July 1900	2,840	17	17.0		2	1	3	3			28	4,211	4		1936	320

Significant Statistics

CALIFORNIA FIELDS AND POOLS

CONSERVATION COMMITTEE

	DATE OF DISCOVERY	AVERAGE WELL DEPTH	API GRAVITY RANGE	API GRAVITY AVERAGE	NUMBER OF WELLS - DECEMBER 31, 1955 WELL STATUS RECORD SHUT-IN STANDING	SHUT-IN IDLE	PRODUCING	TOTAL ACTIVE	TOTAL NO. OF WELLS	ABANDONED 1955	ABANDONED CUM. 1-1-55	OIL PRODUCTION (DEDUCTS INJECTED OAS) THOUSAND BARRELS 1955	THOUSAND BARRELS CUMULATIVE TO 1-1-55	NET WITHDRAWAL FORMATION GAS MILLIONS CU. FT. 1955	MILLIONS CU. FT. CUMULATIVE TO 1-1-55	PEAK PRODUCTION YEAR	PEAK PRODUCTION B/D
LOS ANGELES REGION (CONT'D)																	
BRADBURY					105	10	561	571	676		79	8,131	236,908	9,835	300,666		
Brea Area	1899	4,713	13-31	24.1	36	6	254	260	296			6,859	213,885	6,760)			
Olinda Area	May 1897	7,698	14-26	18.4	65	2	248	250	315					1,260)		1954	18,738
Olinda East Area	Sep. 1953	3,768	31	30.7			1	1	1			3	4	1	2	1954	9
Tonner Area	May 1920	3,099	18-29	25.2	4	2	58	60	64			1,269	22,619	1,814	27,610	1952	4,695
COYOTE EAST					19	1	266	266	285		81	2,399	70,191	2,431			
Nuales	1917	3,318	15-24	21.2	4	1	18	19	23			72	3,202	48)			
Anaheim	1917	3,998	15-27	22.0	14		143	143	157			1,185	55,332	1,313)		1922	7,538
Miocene "A"	1934	4,996	17-30	23.9	1		42	42	43			298	3,378	334		1952	1,012
Stern	1928	6,404	21-28	24.2			62	62	62			844	8,279	729		1952	2,834
Tank Vapors														7			
COYOTE WEST					16	8	333	341	357	3	10	2,688	181,495	3,147	158,598		
Top-East	Dec. 1946	3,380	19-27	20.5		1	8	9	9					24		1948	484
Main	Apr. 1909	4,065	17-33	22.0	6		142	142	148	2		1,714	149,727	789)		1928	34,561
"99"	May 1924	4,288	19-31	29.6	2	1	89	90	92	1				670)			
Lower "99" East	May 1944	4,587	17-32	25.5	1	1	14	15	16			130	2,588	21		1946	1,780
"138"	Jan. 1947	5,181	20-33	30.5			7	7	7			59	987	223		1948	519
Emery East	June 1930	5,977	17-35	30.5	2	1	39	40	42			389	13,002	656		1948	3,451
Emery West	Jan. 1930	5,583	30-33	32.5	5	4	33	37	42			409	15,064	795		1934	3,901
McNally	July 1939	7,082	25	25.0			1	1	1			7	187	9		1939	60
DOMINGUEZ					38	38	335	373	405	2	35	3,151	203,189	4,119	326,986		
Del Amo Estate Block	Feb. 1946	10,419	25-31	28.0			4	4	4			37	124	66		1954	108
East Block																	
Pliocene 3, 4 & U-5	1929	5,124	26-33	29.0	1		20	20	21			236	12,071	217		1935	3,246
Pliocene L-5 & 6	1940	6,162	29-31	29.5			10	10	10			113	2,400	210		1944	825
Pliocene Others	1923	4,310	27-32	29.5	12	2	56	58	70			546	50,280	305		1925	34,517
East Central Block																	
Pliocene	1923	4,902	27-33	30.2	7	18	57	75	82	1		490	40,607	604	Inc. w/East - Pliocene Others		
Miocene 8 & "C"	1943	7,582	27-31	27.2	1		1	1	2			2	66	6		1951	48
Southeast Block - Miocene	Mar. 1948	8,037	26-31	29.5			6	6	6	1		77	691	104		1950	147
West Central Block																	
Pliocene	1923	5,091	26-34	30.1	9	1	55	56	65			524	50,547	624	Inc. w/East - Pliocene Others		
Miocene 7	1934	6,809	26-40	30.7		1	13	14	14			67	8,873	183		1936	4,495
Miocene 8	1936	7,519	26-37	29.9		1	19	20	20			175	9,695	535		1937	4,517
Miocene 7 & 8 South	1938	7,955	27-31	29.9	2	1	16	17	19			119	4,729	217		1940	1,929
West Block																	
Pliocene 5	1944	6,492	31-34	31.5		3	6	9	9			197	2,795	206	1,848	1947	1,624
Pliocene Others	1947	5,463	28-33	29.5		1	4	5	5			44	1,221	44		1948	799
Miocene 6, 7 & 8	1938	7,543	26-36	30.0		10	68	78	78			664	19,076	1,043		1941	7,246
Miocene C & D	Dec. 1947	8,287	30-32	30.3									12			1951	110
Tank Vapors														31			
EAST LOS ANGELES	Feb. 1946	8,582	32-35	33.5			19	19	19		1	248	3,325	303	5,514	1949	1,540
EL SEGUNDO	Aug. 1935	7,271	17-27	18.0		1	17	18	18	1	49	75	12,591	9	589	1938	10,400
HUNTINGTON BEACH					119	101	1,520	1,621	1,740	16	406	21,554	543,978	15,800	515,158		
Huntington Avenue Area																	
Main	Mar. 1954	5,095	25-26	25.5			8	8	8			56	56	34	34	1954	153
Others	Aug. 1953	5,182	14	13.5		1	1	2	2			10	14	1	1954	28	
North Area - Tar Bolsa	Aug. 1920	2,824	12-22	20.0	8	5	115	120	128			896	289,027	567	Included with Ashton		
- Fault Zone	Feb. 1947	3,819	18-28	22.4	1		15	15	16			177	1,648	347		1949	878
- Ashton	Apr. 1921	4,140	14-31	26.5	38	48	457	505	543	6		4,493		3,496		1923	94,125
Slough Area - Ranger	Dec. 1954	6,460	30-31	30.7			2	2	2			23	23	0		1954	46
- Lomita Lands	Dec. 1954	8,000	30	30.0			1	1	1			3	3	1	1	1954	8
South Area (On-Shore)																	
Tar Zone	July 1926	2,175	11-19	15.0	52	10	161	171	223	7		521	6,749	198		1948	2,689
"A-37"	Aug. 1942	3,714	13-23	18.5	4		88	88	92	1		1,024	5,427	668	4,640	1954	2,806
"A-66"	July 1945	4,785	24-32	28.5			20	20	20			207	1,101	642	7,622	1953	604
Jones	July 1926	3,526	13-23	16.8	2	1	33	34	36			248	4,724	233		1948	1,660
Main	Sep. 1926	3,982	11-26	21.9	11	6	147	153	164	1		684	48,648	671	Included with Ashton		

Significant Statistics

Significant Statistics

CALIFORNIA FIELDS AND POOLS

CONSERVATION COMMITTEE

	DATE OF DISCOVERY	AVERAGE WELL DEPTH	API GRAVITY APPROX. RANGE	API GRAVITY APPROX. AVERAGE	NUMBER OF WELLS - DECEMBER 31, 1954 WELL STATUS RECORD SHUT-IN STANDING	SHUT-IN IDLE	PRODUCING	TOTAL ACTIVE	TOTAL NO. OF WELLS	ABANDONED 1954	ABANDONED CUM. 1-1-55	NET WITHDRAWAL FORMATION GAS OIL PRODUCTION (DEDUCTS INJECTED GAS) THOUSAND BARRELS 1954	THOUSAND BARRELS CUMULATIVE TO 1-1-55	MILLIONS CU. FT. 1954	MILLIONS CU. FT. CUMULATIVE TO 1-1-55	PEAK PRODUCTION YEAR	PEAK PRODUCTION B/D
LOS ANGELES REGION (CONT'D)																	
HUNTINGTON BEACH (CONT'D)																	
South Area (Off-Shore)																	
Jones	June 1942	4,386	13-20	16.9		22	130	152	152			3,020	38,454	1,337	19,709	1948	11,620
Main	Sep. 1926	6,338	16-26	23.1	3	8	342	350	353	1		10,700	146,604	7,606		1954	27,944
HYPERION	Mar. 1944	6,842	16-18	16.5			2	2	2	1	2	19	247	8	74	1948	131
INGLEWOOD					18	3	476	479	497	4	42	4,778	194,903	4,046	111,298		
Vickers	Sep. 1924	2,286	12-24	19.2	15	3	354	357	372	3		3,743	147,638	2,049		1925	50,270
Rindge	July 1925	3,314	18-35	28.5	1		39	39	40			395	19,345	370	17,219	1937	5,335
Rubel	Aug. 1934	4,060	20-33	30.8	1		31	31	32	1		483	18,481	558	19,311	1938	4,668
Moynier	Feb. 1932	5,644	20-31	26.4	1		30	30	31			474	3,395	819		1952	1,483
Bastow	Sep. 1940	8,412	20-42	29.6			22	22	22			163	5,644	250	16,568	1942	2,281
LAWNDALE							9	9	9	2	6	131	2,485	138	3,992		
Upper Pools	Dec. 1928	5,841	26-29	27.3			3	3	3			4	1,166	6		1929	1,075
Johnson	Sep. 1947	8,066	26-28	26.9			6	6	6	2		127	1,279	138	3,986	1949	758
LONG BEACH					112	38	1,187	1,225	1,337	14	1,006	7,740	781,461	7,395	980,529		
Airport Area	Feb. 1954	8,307	33	32.8			13	13	13			604	604	699	699	1954	1,654
Northwest Extension Area	July 1937	4,404	21-76	28.1	6	1	15	16	22			120	4,910	49		1939	2,112
Old Area																	
Upper Pools	June 1921	5,124	14-33	28.8	106	37	1,111	1,148	1,254	14		6,590	771,361	5,741		1923	188,522
Wardlow	Apr. 1951	7,151	26-33	32.0			21	21	21			199	1,473	632	6,411	1951	1,672
Circle	Mar. 1952	8,743	31-32	31.5			2	2	2			21	58	25		1953	83
De Soto-South Flank	Dec. 1938	10,046	26-30	28.7			22	22	22			178	2,667	217		1951	1,572
De Soto-North Flank	July 1947	9,383	24-30	27.8			3	3	3			28	398	32		1949	237
MONTEBELLO					51	10	317	327	378	14	194	1,575	162,784	2,570	179,922		
East Area - Watt	Feb. 1935	5,229	24-36	30.9			5	5	5			27	3,613	106		1936	2,712
- Crum	Sep. 1933	4,767	20	19.8	1		1	1	2			3	217			1934	221
Main Area - Baldwin "1-2-3"	Feb. 1917	3,330	17-29	24.0	17	6	236	242	259	10		1,186	133,854	1,732		1919	33,153
West Area	Dec. 1927	7,092	18-39	34.5	33	4	75	79	112	4		359	25,100	732		1940	11,856
NEWPORT																	
Mesa Area - Cagney	July 1947	1,409	9-11	11.0	4		1	1	5		16	1	13			1947	10
NEWPORT WEST					29	5	232	237	266	8	16	1,555	19,033	205			
Aldrich Area - "B"	Sep. 1945	3,139	13-25	19.5	2	2	24	26	28	2		186	2,230	97	553	1947	1,261
- "C"	July 1946	4,211	13-26	19.9	2	1	6	7	9	1		23	583	16	593	1947	653
Anaheim Sugar Area	July 1946	5,145	15-21	18.0			35	35	35	1		471	6,227	46	1,378	1949	3,214
Main Area	1943	1,809	12-18	15.5	24	1	137	138	162	2		612	8,718	2		1946	4,159
Off-Shore Area	Dec. 1953	4,119	17-20	19.1			5	5	5			63	64	8	9	1954	173
Surf Area - East Block	Jan. 1952	3,746	16-25	20.7	1	1	18	19	20	2		168	296	12	75	1954	459
- West Block	Aug. 1922	4,305	18-26	23.0			7	7	7			29	1,420	24		1947	115
PLAYA DEL REY					34	2	100	102	136		125	507	57,290	1,010	58,054		
Del Rey Hills Area	Nov. 1934	6,302	18-24	22.8	31	1	14	15	46			107	11,118	502		1935	7,766
East Area - Kideon	Dec. 1951	7,385	23	23.0			1	1	1			2	16	12	35	1951	24
Venice Area	Dec. 1929	4,649	13-23	21.1	3	1	85	86	89			398	46,156	496		1931	26,510
Tank Vapors														0			
POTRERO					2	2	35	37	39	1	36	248	8,832	1,416	28,667		
East Area	Apr. 1928	5,143	24-47	40.5	2	1	21	22	24			156	7,524	457	4,963	1941	1,944
Inglewood City Area	Oct. 1946	10,201	23-48	29.6		1	14	15	15	1		92	1,308	959	23,704	1949	863
West Area	July 1934	5,635	34-38	34.0											Included with East Area		
RICHFIELD					29	6	111	117	146	1	109	2,738	124,534	2,627	151,601		
East Area	Mar. 1919	3,849	15-25	18.5	18	5	309	314	332	1		1,660		1,647		1922	22,780
North Area	June 1951	2,754	17	17.3		1	1	2	2			8	8	6	6	1954	21
West Area	June 1920	4,269	15-26	22.5	11		101	101	112			1,070		774	Included with East Area		
ROSECRANS					28	5	227	232	260	1	38	1,360	73,049	3,701	162,323		
Athens Area - Upper	Feb. 1925	4,557	32-36	35.6	2		26	26	28			122		126)		1925	19,899
- Lower	May 1924	5,955	30-36	35.1	1	1	25	26	27			86		141)			
- O'Dea	July 1940	7,469	29-34	31.4		1	11	12	12	1		79	1,652	101		1950	411
Bank Area - "7 & 8"	Feb. 1944	8,037	29-31	30.3			3	3	3			75	1,305	134	1,778	1945	464
Howard Townsite Area																	
Zins	Oct. 1950	5,725	33-60	56.6			2	2	2			22	44	413		1954	60
"7 & 8"	May 1940	6,946	25-57	33.1			24	24	24			179	2,408	1,304	10,850	1949	1,949

Significant Statistics

CALIFORNIA FIELDS AND POOLS

CONSERVATION COMMITTEE

	DATE OF DISCOVERY	AVERAGE WELL DEPTH	API GRAVITY RANGE	API GRAVITY APPROX. AVERAGE	NUMBER OF WELLS - DECEMBER 31, 1954 WELL STATUS RECORD SHUT-IN STANDING	SHUT-IN IDLE	PRODUCING	TOTAL ACTIVE	TOTAL NO. OF WELLS	ABANDONED CUM. 1954	ABANDONED CUM. 1-1-55	OIL PRODUCTION (DEDUCTS INJECTED GAS) THOUSAND BARRELS CUMULATIVE 1954	OIL PRODUCTION (DEDUCTS INJECTED GAS) THOUSAND BARRELS CUMULATIVE TO 1-1-55	NET WITHDRAWAL FORMATION GAS MILLIONS CU. FT. CUMULATIVE 1954	NET WITHDRAWAL FORMATION GAS MILLIONS CU. FT. CUMULATIVE TO 1-1-55	PEAK PRODUCTION YEAR	PEAK PRODUCTION B/D
LOS ANGELES REGION (Cont'd)																	
WILMINGTON					36	85	2,657	2,742	2,778	49	395	41,540	691,682	34,030	635,444		
Terminal Area																	
Fault Block I																	
Tar-Ranger-Terminal	Dec. 1936	3,321	13-25	17.9	7	3	153	156	163			2,196	39,458	1,227		1951	7,753
Ford	Sep. 1937	5,443	26-31	30.7	3		27	27	30			246	8,101	435	12,431	1946	2,923
"237"	Feb. 1946	5,909	22-31	30.5		2	19	21	21			278	6,134	347	7,403	1948	4,703
Fault Block II																	
Tar-Ranger	Apr. 1937	2,966	12-20	15.7	3	5	134	139	142			1,374	23,779	1,101	19,948	1944	5,019
U. P.	Jan. 1942	4,381	26-30	29.7		2	10	12	12	1		95	1,733	210	3,026	1951	640
Ford	July 1937	5,434	25-31	28.6		4	28	32	32			255	8,006	661	12,821	1948	2,893
"237"	June 1945	5,913	25-31	29.2		2	13	15	15			165	2,543	245	3,752	1947	1,672
Fault Block II-A																	
Terminal U & L	Apr. 1937	3,764	13-29	24.3		8	101	109	109	5		3,733	61,773	3,174	60,744	1938	13,660
Fault Block II-B																	
Terminal U & L	Apr. 1937	3,767	22-30	28.0			20	20	20	1		756	9,945	526	10,554	1943	2,458
Fault Block III																	
Tar-Ranger	Dec. 1937	3,013	12-24	21.1	1	8	138	146	147	10		2,310	25,413	2,256	27,751	1944	7,207
Upper Terminal	Jan. 1938	3,542	22-29	27.5			56	56	56	1		3,522	31,949	2,514	34,844	1952	11,027
Lower Terminal	Oct. 1939	4,069	28-31	29.3			24	24	24	1		590	10,159	919	15,928	1942	2,924
U. P.	June 1943	4,332	30	30.0									296		330	1944	170
Harbor Area																	
Fault Block IV																	
Tar	Mar. 1943	2,550	14-18	15.8			58	58	58			795	4,587	447	3,768	1952	2,579
Ranger	Nov. 1937	3,171	13-25	17.5	4	6	172	178	182	1		1,943	29,206	1,545		1951	6,549
Terminal U & L	Jan. 1938	3,756	13-30	24.1	3	8	269	277	280	12		5,637	163,949	3,049	152,864	1938	33,447
U. P.	Oct. 1946	4,379	25-30	27.5			21	21	21	4		194	1,761	284	3,323	1950	1,148
Fault Block IV-A - "237"	Oct. 1945	6,015	24-32	29.0	3		10	10	13	1		103	7,089	148	12,752	1947	7,548
Fault Block IV-B - "237"	Apr. 1946	5,996	24-30	28.7	1		30	30	31	1		272	13,995	433	22,940	1947	12,375
Fault Block IV-AB - Ford	Mar. 1945	5,582	23-30	27.5	1	2	22	24	25	4		244	10,884	467	15,576	1947	9,875
Fault Block IV-D																	
UP-Ford-"237"	Apr. 1948	5,536	20-30	28.0		6	72	78	78	1		603	11,174	916		1948	8,530
Fault Block V - Tar	Aug. 1951	2,701	12-15	14.0			91	91	91			1,780	4,723	7,064	4,792	1954	4,872
- Ranger	Jan. 1938	3,188	12-23	17.5	5	2	273	275	280	3		2,808	47,945	2,705		1945	10,504
Fault Block V-A																	
Terminal U & L	Sep. 1938	3,386	20-29	27.5		1	14	15	15			212	12,396	229	11,167	1939	3,842
U. P.	Sep. 1952	5,058	25-28	27.3			4	4	4			73	236	101	347	1953	332
Ford	Mar. 1952	6,039	27-28	27.7			5	5	5			198	684	264	875	1953	749
Fault Block V-B																	
Upper Terminal	Dec. 1944	3,505	15-25	21.5	2	15	99	114	116	1		2,391	19,304	1,368	24,321	1951	14,849
Lower Terminal	Dec. 1944	4,104	20-29	23.9		3	36	39	39			1,306	11,052	988	13,617	1952	5,395
U. P.	Jan. 1953	5,013	25-28	26.6			10	10	10			309	549	304	547	1954	845
Ford	Mar. 1952	5,878	26-29	28.4			8	8	8			209	762	267		1953	981
Fault Block VI																	
Ranger	Apr. 1946	4,573	14-20	17.5	1		79	79	80			938	20,988	1,334	15,872	1948	5,375
Upper Terminal	Jan. 1948	4,213	17-20	19.5		2	29	31	31			1,313	7,004	1,013	7,603	1953	3,859
Lower Terminal	May 1948	4,488	17-25	21.5	1		19	19	20			977	5,780	556	4,587	1952	3,310
U. P.	Mar. 1954	5,217	24-26	25.4			1	1	1			72	754	22	22	1954	198
Ford	Oct. 1953	5,951	26-29	28.2			8	8	8			336	78	352	74	1953	1,055
Town Lot Area																	
Tar-Ranger-Terminal	Apr. 1934	3,956	12-30	15.3	1	5	579	584	585	2		3,184	97,528	1,407		1937	20,704
Ford	Jan. 1937	2,630	14-30	28.3		1	23	24	24			143		118	8,557	1939	2,683
Tank Vapors														4			

Significant Statistics

CALIFORNIA FIELDS AND POOLS

CONSERVATION COMMITTEE

	DATE OF DISCOVERY	AVERAGE WELL DEPTH	API GRAVITY RANGE	API GRAVITY APPROX. AVERAGE	NUMBER OF WELLS - DECEMBER 31, 1954 — WELL STATUS RECORD: SHUT-IN STANDING	SHUT-IN IDLE	PRODUCING	TOTAL ACTIVE	TOTAL NO. OF WELLS	ABANDONED 1954	ABANDONED CUM. 1-1-55	OIL PRODUCTION (DEDUCTS INJECTED GAS) THOUSAND BARRELS 1954	OIL PRODUCTION (DEDUCTS INJECTED GAS) THOUSAND BARRELS CUMULATIVE TO 1-1-55	NET WITHDRAWAL FORMATION GAS MILLIONS CU. FT. 1954	NET WITHDRAWAL FORMATION GAS MILLIONS CU. FT. CUMULATIVE TO 1-1-55	PEAK PRODUCTION YEAR	PEAK PRODUCTION B/D
LOS ANGELES REGION (CONT'D)																	
MISCELLANEOUS (CONT'D)																	
Main Area - Maxwell-Hoge	Aug. 1924	5,792	37-42	38.4	6	1	20	21	27			132		183)	Included with Aliso		
- Zins	Nov. 1927	6,503	30-42	33.0	5		25	25	30			167		108)	Area - Upper & Lower		
- O'Dea	Mar. 1937	7,807	28-38	30.9	10	1	47	48	58			852	15,613	126		1938	9,055
- 8th	Dec. 1937	8,571	28-31	29.3	1		9	9	10			58	3,369	114		1938	1,419
South Area - Zins	Sep. 1940	6,585	38-41	39.8		1	3	4	4			12	71	41		1952	110
- O'Dea	Aug. 1939	7,892	27-36	31.5	3		26	26	29			232	4,809	198		1941	2,196
- 8th	Aug. 1940	8,716	28-39	32.5			6	6	6			45	753	73		1941	199
Tank Vapors														27			
SAN CLEMENTE	Apr. 1954	4,150	42	42.0		1	1	2	2			1	1			1954	4
SANSINENA					16	2	113	115	131		11	3,945	10,166	2,688	8,137		
Pliocene Area	Dec. 1940	2,635	17	17.0	13		2	2	15			6	145	1	60	1943	44
Miocene Area	July 1947	3,557	20-26	19.9	2	1	2	3	5			4	29	2	9	1948	17
East Area																	
Miocene "C" - Part B	May 1954	4,246	29	28.9			1	1	1			6	6	10	10	1954	18
- Part S	Mar. 1954	4,222	26-28	27.2			7	7	7			236	236	82	82	1954	646
Miocene "D" - Part B	Jan. 1954	5,289	27-30	28.9			6	6	6			177	177	131	131	1954	484
- Part S	Sep. 1953	5,331	27-33	29.3			7	7	7			215	226	175	184	1954	588
Lindauer Area - Miocene "A"	Feb. 1953	4,855	23	22.6	1		1	1	2			14	28	6	15	1953	38
Naranjal Area - Miocene "A"	May 1952	5,113	28-31	29.4			10	10	10			178	476	221	574	1954	488
- Miocene "C"	June 1954	6,880	31	30.9			1	1	1			58	58	68	68	1954	158
West Area																	
Main Block - Miocene C-D	May 1945	4,060	17-32	24.2		1	61	62	62			2,173	8,374	1,854	6,754	1953	6,995
G-4 Block - Miocene C-D	Feb. 1953	3,714	18-20	18.6			2	2	2			27	60	8	28	1953	69
New England Block																	
Miocene D	Dec. 1950	3,568	18-24	20.0			6	6	6			30	42	7	12	1954	83
Curtis Block																	
Miocene C-D	Apr. 1950	5,415	17-19	17.7			7	7	7			123	190	120	210	1953	469
SANTA FE SPRINGS					81	9	599	608	699	11	301	5,441	554,252	5,586	753,148		
O'Connell Southeast	Mar. 1952	7,983	29-35	33.1		1	6	7	7	1		99	341	50	178	1952	419
Others	July 1921	5,490	20-35	32.5	81	8	593	601	682	10		5,082	553,891	5,526	752,838	1923	218,579
Tank Vapors														10	38		
SEAL BEACH					13	6	233	239	252		31	3,585	138,108	5,443	136,278		
Alamitos Area	1926	6,115	24-32	26.5	5	3	44	47	52			207	27,302	246		1927	20,757
North Block - San Gabriel	Apr. 1945	4,880	24-27	25.5			4	4	4			31	529	26	272	1947	354
- Selover	Aug. 1926	5,073	26-28	27.0		1	3	4	4			37	1,068	42		1940	371
- Hasen	June 1927	5,697	21-28	25.5			18	18	18			225	3,642	246		1951	857
- McGrath	May 1943	8,536	26-34	28.5		1	68	69	69			1,837	19,967	3,633	21,695	1949	6,747
North Block-East Extension																	
McGrath	Dec. 1954	7,379	31	31.4			1	1	1			2	3	1	1	1954	7
South Block - Bixby-Selover	Aug. 1926	4,677	24-28	26.0	5		17	17	22			139	28,555	170)		1929	32,952
- Hasen	June 1927	5,296	22-28	25.5	1		55	55	56			698	46,493	755)			
- McGrath	Feb. 1928	6,399	25-33	31.5	2		15	15	17			144	10,011	121		1936	2,198
- Lane	Feb. 1952	10,086	28-32	30.2		1	8	9	9			205	538	146	388	1953	433
SUNSET BEACH	June 1954	6,622	30	30.0			2	2	2			25	25	0	0	1954	70
TORRANCE					66	29	790	819	885	2	472	2,524	110,886	1,715	98,935		
Tar-Ranger	Jan. 1946	3,460	12-16	14.5	2		7	7	9			34	170	19		1949	51
Main	June 1922	3,728	13-26	18.5	49	20	654	674	723	2		2,057	121,986	1,187		1924	47,884
Del Amo	July 1936	4,987	16-28	24.0	15	9	129	138	153			445	18,730	509		1939	12,047
WHITTIER					53	6	137	143	196	3	94	490	22,650	269			
Bartola Area	Nov. 1935	3,135	Abandoned										69			1936	59
Central Area - Main	1898	2,106	12-30	19.1	53	5	121	126	179	2		300		120		1944	921
- Central Fee	Sep. 1953	5,129	27-36	31.1			9	9	9			167	190	149	184	1954	568
Hideout Heights Area	1901	2,679	15-25	20.3		1	7	8	8	1		23				1935	128

Significant Statistics

CALIFORNIA FIELDS AND POOLS

CONSERVATION COMMITTEE

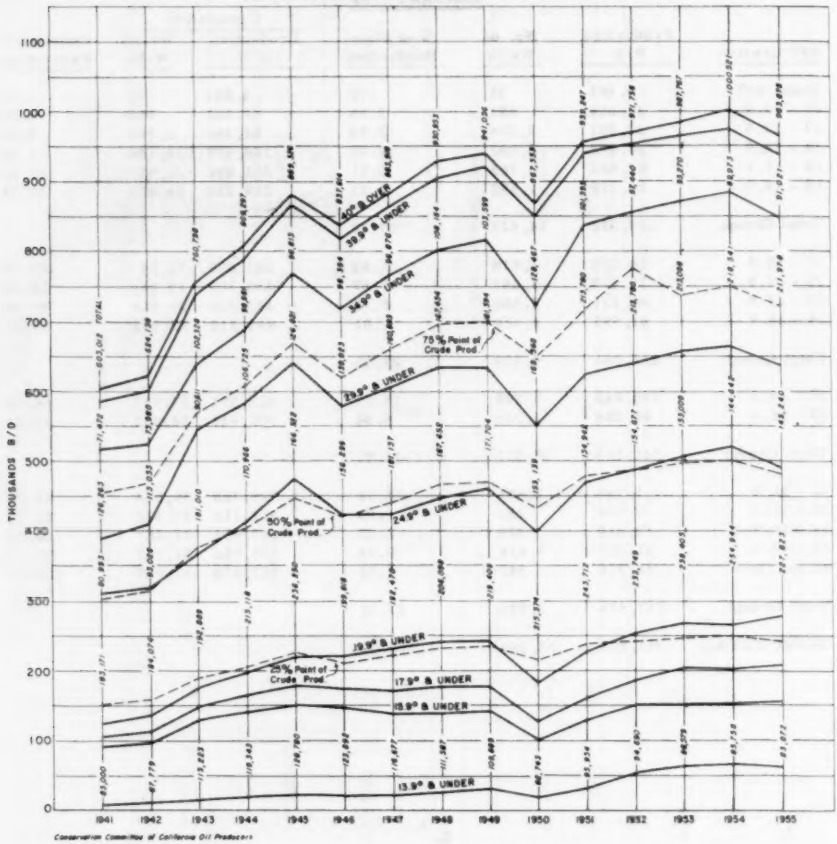
	DATE OF DISCOVERY	AVERAGE WELL DEPTH	API GRAVITY APPROX. RANGE	API GRAVITY APPROX. AVERAGE	NUMBER OF WELLS - DECEMBER 31, 1954 WELL STATUS RECORD SHUT-IN STANDING	SHUT-IN IDLE	PRODUCING	TOTAL ACTIVE	TOTAL NO. OF WELLS	ABANDONED 1954	ABANDONED CUMUL. 1-1-55	NET WITHDRAWAL FORMATION GAS OIL PRODUCTION (DEDUCTS INJECTED GAS) THOUSAND BARRELS 1954	THOUSAND BARRELS CUMULATIVE TO 1-1-55	MILLIONS CU. FT. 1954	MILLIONS CU. FT. CUMULATIVE TO 1-1-55	PEAK PRODUCTION YEAR	PEAK PRODUCTION B/D
LOS ANGELES REGION (CONT'D)																	
OTHER FIELDS					65	71	180	301	366	1	185	615	71,667	562			
ANAHEIM	Jan. 1951	4,503			Abandoned								4			1951	11
BELMONT OFF-SHORE	Nov. 1948	8,590	26	26.5		2	1	3	3			14	75	1	7	1954	38
BURNS PARK																	
East Area	Mar. 1942	9,375	21	21.0	Abandoned								197			1943	132
West Area	Sep. 1944	11,800			Abandoned								51			1945	45
CHINO HILLS	Apr. 1950	1,688	18-27	21.6	1	1	7	8	9			18	91			1951	70
CHINO-MANGA	1920	3,773	22-23	22.4	1			1	1				33			1934	12
KRAEMER	Sep. 1918	2,340	18-23	20.4	1	2	20	22	25	1		76	2,038	51	Included with Richfield		
LA MIRADA	Dec. 1945	11,958	35	34.6	Abandoned							4	25	2	1946	53	
LEFFINGWELL	Feb. 1946	9,357	30-38	33.7	1		12	12	13			114	214	677	1,219	1954	313
LOS ANGELES	1892	0%	12-16	14.0			80	80	80			44	70,499		Included with Salt Lake		
NORTH WHITTIER HEIGHTS	July 1944	1,638	15-16	15.4	1		3	3	4			4	44		1945	23	
OLIVE	Apr. 1953	5,945	14-15	14.5			4	4	4			35	53	30	1954	99	
PUENTE HILLS	1880	3,823	18-30	27.2	47		8	8	55			13	3,477	47	Included with Brea-Olinda		
SALT LAKE	1902	1,960	12-16	13.5			7	7	7			74	43,386		1908	14,041	
TALBERT	Sep. 1947	5,626	19	19.0			1	1	1			1	34		1947	31	
TURNBULL	Oct. 1921	3,097	24-28	27.5	1		4	4	5			18	651	24	512	1943	334
WALNUT	May 1918	1,465	16-17	16.5	1	1	2	3	4			5	81			1949	16
YORBA LINDA					9	15	31	46	55			175	3,779	29			
Shell	Feb. 1938	3,156	13-30	17.4	8	13		13	15			78	1,972	28		1943	739
Smith	Dec. 1937	1,994	16-20	15.5	7	1	20	21	28			67	1,772	1		1938	527
Swallow	Mar. 1954	520	13	12.7		1	11	12	12			30	30			1954	82
LOS ANGELES REGION TOTAL:					928	391	10,773	11,164	12,090	134	3,700	116,572	4,313,656	109,906			
STATE TOTAL:					3,283	3,480	32,868	36,328	39,589	326	9,186	355,865	10,084,439	383,400	12,585,643		
CONDENSATE:																	
COLES LEVEE SOUTH																	
Condensate-Debutanized	Nov. 1938		52-54			7	29	36	36			982	13,322	(3,716)	5,989	1947	4,015
PALMA																	
Palma																	
Condensate-Debutanized	May 1945		53-63			24	54	78	78			1,156	12,159	15,722	#	1945	4,627
CONDENSATE POOLS TOTAL:						31	83	114	114			2,098	25,481	12,006	5,989		
GRAND TOTAL:					3,283	3,491	32,951	36,442	39,683	326	9,186	357,963	10,109,920	395,406	12,591,632		

Combined with Crude Oil Total Page E
() Negative

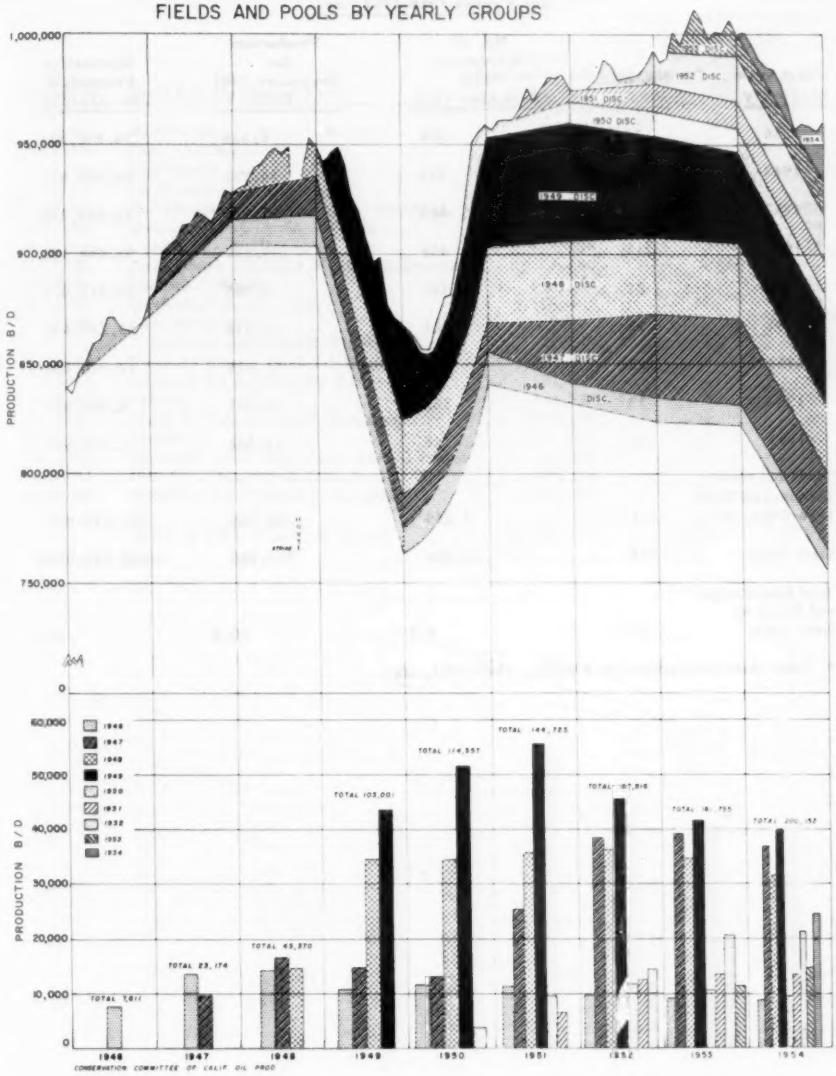
GRAVITY DISTRIBUTION OF PRODUCTION IN CALIFORNIA
JANUARY 1955

API Gravity	Production B/D	No. of Wells	% of State Production	Cumulative Production B/D	Cumulative No. of Wells	Cumulative Percentage
Under 10°	6,841	75	.71	6,841	75	.71
10 - 11.9	34,259	583	3.55	41,100	658	4.26
12 - 13.9	20,001	3,206	2.08	61,101	3,864	6.34
14 - 15.9	83,872	6,282	8.70	144,973	10,146	15.04
16 - 17.9	57,923	2,785	6.01	202,896	12,931	21.05
18 - 18.9	26,336	1,592	2.73	229,232	14,523	23.78
Total Group:	229,232	14,523	23.78			
19 - 19.9	34,258	1,018	3.55	263,490	15,541	27.33
20 - 21.9	75,819	3,497	7.87	339,309	19,038	35.20
22 - 23.9	84,411	2,584	8.76	423,720	21,622	43.96
24 - 24.9	67,593	2,320	7.01	491,313	23,942	50.97
Total Group:	262,081	9,419	27.19			
25 - 29.9	145,240	3,705	15.07	636,553	27,647	66.04
30 - 31.9	65,889	1,326	6.84	702,442	28,973	72.88
Total Group:	211,129	5,031	21.91			
32 - 32.9	117,346	1,571	12.18	819,788	30,544	85.06
33 - 33.9	8,924	281	.93	828,712	30,825	85.99
34 - 34.9	19,819	378	2.05	848,531	31,203	88.04
35 - 39.9	91,021	1,414	9.44	939,552	32,617	97.48
40 and Over	24,326	342	2.52	963,878	32,959	100.00
Total Group:	261,436	3,986	27.12			
GRAND TOTAL:	963,878	32,959	100.00			

VOLUME OF CRUDE PRODUCE IN CALIFORNIA BY GRAVITIES — B/D
(PLOTTED FOR JANUARY OF EACH YEAR)



CALIFORNIA PRODUCTION OF NEWLY DISCOVERED
FIELDS AND POOLS BY YEARLY GROUPS



Newly Discovered Fields and/or Pools for 9 years 1946-1954, incl.

Year of Discovery	No. of Pools	No. of Producing Wells December 1954	Production for December 1954 B/D	Cumulative Production to 12/31/54
1946	19	204	8,916	34,890,336
1947	29	933	36,793	64,700,051
1948	21	620	31,566	72,834,230
1949	13	454	39,960	93,064,193
1950	21	191	9,765	15,312,073
1951	16	241	13,332	13,285,570
1952	32	294	21,078	17,319,630
1953	39	182	14,057	6,885,023
1954	32	146	24,682	2,918,901
Total All Newly Discovered Pools 1946-1954, incl.	222	3,265	200,149	321,210,007
State Total	578	32,864	959,949	3,048,743,000*
% of New Fields and Pools to State Total	38.3	9.9	20.8	10.5

* Total State Production for 9 years, 1946-1954, incl.

New Field and Pool Discoveries during Year 1946

Date of Discovery	Names of Fields and Pools	Cumulative Oil Production to 12/31/54	Wells and Production December 1954	
			No. of Producing Wells	Production B/D
1- 3-46	McKittrick - Cymric - Bolton	71,054	-	-
2- 2-46	East Los Angeles	3,324,929	19	631
2- 3-46	Leffingwell	214,117	12	239
2-22-46	La Mirada	25,250	-	-
3-13-46	McKittrick-Salt Creek Main-Carneros	11,825,731	43	2,905
3-22-46	McKittrick - Cymric - Woody	630,090	7	79
4-12-46	Casmalia - Arellanes	134,688	2	25
6-11-46	Poso Creek-Premier West (abandoned)	3,660	-	-
6-18-46	Ramona - Black	804,046	9	132
6-21-46	Newhall-Potrero - 5th	6,559,406	35	2,585
7- 5-46	East Dominguez (now Del Amo Estate Block)	123,479	4	72
7- 9-46	Newport West - Anaheim Sugar Area	6,221,822	35	1,280
7-12-46	Newport West - Aldrich Area - "C"	582,877	6	81
7-25-46	Jasmin	364,747	5	46
8-13-46	North El Segundo (now Hyperion)	247,050	2	40
8-26-46	Alondra	1,349,003	5	210
10- 1-46	Mountain View-Earl Fruit Area-Lamont	82,482	1	17
10-18-46	Potrero - Inglewood City Area	1,308,208	14	408
11-10-46	McKittrick - Cymric - Phacoides	1,038,058	5	166
	Total of 1946 Discovery Group:	34,890,336	204	8,916

New Field and Pool Discoveries during Year 1947

Date of Discovery	Names of Fields and Pools	Cumulative Oil Production to 12/31/54	Wells and Production December 1954	
			No. of Producing Wells	Production B/D
	Olivera Canyon (first production 6-20-44)	1,524,174	12	903
	West Mountain - Sespe (first production 2-45)	1,715,616	26	394
	Mountain View-Arvin Area-Lower Chanac - Santa Margarita (now "Others") (first production 12-6-45)	2,236,647	40	365
	Mountain View-DiGiorgio - Schist (first production 11-5-46)	99,979	1	1
1-19-47	Coyote West - "138"	926,953	7	154
1-23-47	Elwood - Sespe West	524,917	4	380
2-16-47	Kettleman Middle Dome - Eocene	327,731	2	75
3-15-47	San Joaquin - Eocene	526,495	7	93
4-12-47	Edison - West Area - Second Duff	13,661,726	238	3,398
4-22-47	Montalvo West - McGrath	1,650,278	13	409
4-23-47	McDonald Anticline - Bacon Hills Area	165,185	-	-
5- 1-47	McKittrick-Belgian Anticline-Oceanic	5,442,162	33	5,976
5-26-47	McKittrick-Belgian Anticline-Rankin	15,279	-	-
6- 6-47	Midway-Sunset - Midway East-Pacific	727,875	11	115
6-16-47	Four Deer - Miocene	831,054	-	-
7- 1-47	McKittrick - Sheep Springs - Oceanic	748,170	2	32
7-13-47	Long Beach-Old Area-De Soto-No. Flank	398,451	3	97
7-18-47	Newport - Mesa Area - Cagney	13,456	1	3
8- 5-47	McKittrick-Belgian Anticline-Pt. of Rocks	4,052,964	41	2,126
8-27-47	Del Valle - East Area - Lincoln	601,834	5	465
9- 1-47	Four Deer - Contact (figures included with Miocene)		-	-
9- 1-47	Lawndale - Johnson	1,279,058	6	304
9- 5-47	Aliso Canyon - Del Aliso	2,150,962	16	1,616
9- 8-47	Huntington Beach - Old - Talbert (now Talbert Field)	35,901	1	1
9-10-47	Kern Bluff	3,639,528	129	1,186
9-18-47	Rosecrans-Northwest Area - Miocene 7 & 8 (now Howard-Townsite, incl. Western Avenue)	2,408,459	24	471
9-22-47	Newhall-Potrero - 4th (figures included with 5th)		-	-
9-24-47	McKittrick-Belgian Anticline-Phacoides	470,582	5	61
9-26-47	Ten Section - "53"	593,416	7	90
10-22-47	Comanche Point	54,059	11	15
11- 4-47	San Ardo - Lombardi	21,512,348	288	18,063
	Total of 1947 Discovery Group:	64,700,051	933	36,793

New Field and Pool Discoveries during Year 1948

Date of Discovery	Names of Fields and Pools	Cumulative Oil Production to 12/31/54	Wells and Production December 1954	
			No. of Producing Wells	Production B/D
	Round Mountain - Alma - Vedder (first production 2-12-47)	373,340	10	46
	Coles Levee North - "68-29" (first production 1-10-47)	237,242	1	43
3- 3-48	San Emigdio - Miocene	1,796	-	-
3-20-48	Dominguez Southeast - 5th & 7th - Miocene	691,035	6	207
4-10-48	Newhall-Potrero - 7th	1,478,146	11	2,636
4-24-48	Del Valle - Vasquez "14"	762,859	13	193
4-27-48	Midway-Sunset - Pentland	23,809	1	5
4-28-48	Petaluma	8,555	1	1
5-19-48	Wheeler Ridge - Coal Oil Canyon	1,120,183	23	361
6- 3-48	Cuyama -Russell "28") Dibblee			
6-18-48	Cuyama -Colgrove "37") Pool	29,546,145	97	8,543
6-19-48	Del Valle - N.L.F. 3-1	47,076	1	6
6-29-48	Guadalupe	2,268,386	39	2,377
7-24-48	Tejon Hills - S	4,587,390	169	1,728
7-30-48	Ciervo	28,562	5	10
8- 3-48	Coal Oil Point - Vaqueros	620	-	-
9-19-48	Guijarral Hills - Leda	15,121,671	39	2,229
11-11-48	Belmont Off-Shore	74,616	1	30
12-12-48	Gosford East - Stevens	3,839,050	23	1,172
12-16-48	Newhall-Townsite	42,463	4	11
12-28-48	San Ardo - Campbell - Aurignac	12,573,700	175	11,943
12-28-48	Newhall-Potrero - 9th	50,112	1	25
	Total of 1948 Discovery Group:	72,834,230	620	31,566

New Field and Pool Discoveries during Year 1949

2- 7-49	Russell Ranch - Main - Colgrove No.	2,216,201	12	474
	- Colgrove So.	3,632,731	20	517
2-25-49	Greeley - "12-21"	77,997	1	27
3- 3-49	Placerita - Juanita	16,306,136	136	2,864
4-28-49	Guijarral Hills - Allison	3,879,214	19	431
5- 4-49	Cuyama South - Homan	61,658,523	214	33,848
5- 4-49	Calder - Stevens	216,975	2	62
6- 4-49	Salt Creek - West Area-Phacoides	427,591	11	165
6-16-49	Lion Mountain - Eocene	79,717	6	39
9- 9-49	Wasco - Eocene	241,458	1	59
10-11-49	Russell Ranch - Griggs-Dibblee	422,385	8	82
11- 8-49	San Miguelito - Third Grubb	3,876,142	23	1,374
11-11-49	Tejon Ranch - Western Area-Reserve	29,123	1	18
	Total of 1949 Discovery Group:	93,064,193	454	39,960

New Field and Pool Discoveries during Year 1950

Date of Discovery	Names of Fields and Pools	Cumulative Oil Production to 12/31/54	Wells and Production December 1954	
			No. of Producing Wells	Production B/D
1-15-50	Castaic Junction-N. L. F. 1 (now "21")	260,252	4	254
2-23-50	Tunis Creek - Corral (now Tejon Hills - V)	1,130,900	26	591
3- 2-50	Del Valle-Kinler Area-Del Valle	151,387	4	40
3-18-50	Tapo Canyon South -McQuaid (combined with Terry)	1,295	-	-
4- 1-50	Morales Canyon - Government "18"	663,347	7	225
4-24-50	Aliso Canyon - Aliso	1,674,852	16	1,011
5-10-50	Morales Canyon - Clayton	655,376	18	207
6- 3-50	Antelope Hills North	1,618,199	10	267
6-18-50	Willow Springs-Tunis Creek-Tecuya (now Tejon Hills - T)	735,461	20	382
6-27-50	McKittrick - Telephone Hills	232,724	1	24
7- 3-50	Las Llajas	20,644	2	9
7-23-50	Hanford	3,929	-	-
8-22-50	Cuyama - Hancock Area (now Taylor Canyon)	223,673	2	93
8-30-50	Lomerias	6,071	-	-
10-11-50	Del Valle - East Area - Barnes (Now Pliocene Gas Sands)	7,100	-	-
11- 9-50	Cuyama South- Hibberd	1,613,826	15	696
11-18-50	Aliso Canyon - Porter West (now abandoned)	2,433	-	-
11-22-50	Midway-Sunset - West Area - Ethel D	528,496	17	713
12- 4-50	Edison Groves - Shields-Arms	410,783	9	162
12- 7-50	Castaic Junction-N. L. F. 3 (now "10")	2,144,670	28	2,975
12-10-50	Honor Rancho - Wayside	3,233,525	12	2,116
	Total of 1950 Discovery Group:	15,312,073	191	9,765

New Field and Pool Discoveries during Year 1951

1-11-51	Anaheim (now abandoned)	3,856	-	-
2- 3-51	Montalvo West - Colonia	377,039	5	947
4-16-51	Long Beach - Wardlow	1,473,009	21	448
4-18-51	Race Track Hill - Portals-Berry	170,878	11	75
5- 8-51	Cuyama Central	22,939	1	14
5-22-51	Pleito Creek	400,238	14	375
6-10-51	Camden	115,185	4	58
6-13-51	Weldon Canyon	144,817	2	117
7- 6-51	Del Valle - South Area	34,646	1	16
8-10-51	Wilmington - F. B. V - Tar	4,723,031	91	4,998
9- 3-51	Aliso Canyon - Mission-Adrian	8,504	1	2
9-12-51	Castaic Hills - Sterling	3,785,625	55	2,475
9-24-51	Rosedale - Stevens	1,257,727	19	1,291
10-31-51	Aliso Canyon - Aliso West	19,485	1	12
10-22-51)				
12-11-51) Re.	Belgian Anticline Northwest-Phacoides	779,642	14	2,502
12- 9-51	Playa del Rey - East Area - Kidson	15,722	1	2
	Total of 1951 Discovery Group:	13,285,570	241	13,332

New Field and Pool Discoveries during Year 1952

Date of Discovery	Names of Fields and Pools	Cumulative Oil Production to 12/31/54	Wells and Production December 1954	
			No. of Producing Wells	Production B/D
	Wilmington -Harbor-F. B. V-A-Ford (completed 3-4-50)	684,413	5	461
	Cuyama Group-Russell Ranch-West (completed 10-29-51) (Redrill)	122	-	-
	Tejon-Grapevine - V Pool (completed 12-6-51)	417,034	11	367
1- 8-52	Goosloo - Stevens	2,131	-	-
1- 8-52	Elk Hills - 29-R - Carneros	29,557	-	-
1-11-52	Antelope Hills - Phacoides	10,376	2	9
1-30-52	Castaic Junction - 15	398,723	4	516
1-31-52	Santa Maria Valley - Houk	509,738	5	502
2- 4-52	Newport West-Surf Area-East Block	295,778	18	611
2-10-52	Welcome Valley	8,102	17	2
2-20-52	Seal Beach - South Block - Lane	537,619	8	577
3- 4-52	Long Beach - Old Area - Circle (included with Main - Upper)	-	-	-
3-18-52	Buena Vista-Buena Vista Hills-Antelope	2,754,977	38	3,815
3-30-52	Wilmington-Harbor-F. B. V-B - Ford	761,582	8	491
3-30-52	Santa Fe Springs-O'Connell Southeast	360,600	6	132
4-14-52	Wheeler Ridge - Eocene	2,012,075	16	4,035
5- 2-52	Torrey Canyon - Deep Sespe	2,208,826	14	3,103
5- 9-52	Bitterwater	47,135	6	44
5-11-52	Coalinga East Extension-Nose-Vaqueros	50,128	2	50
7- 8-52	Horse Meadows	23,144	1	19
7- 9-52	Los Lobos - "18-21"	387,211	9	392
8- 4-52	Cymric-Sheep Springs Area-Phacoides	71,968	2	59
8- 4-52	Careaga	5,060	-	-
8-15-52	Oakridge	2,415,874	39	2,696
8-21-52	Shiells Canyon - Basolo	272,461	14	368
9- 6-52	Edison - Main Area - Graham (now incl. in Race Track Hill)	-	-	-
9-14-52	Lost Hills - "G-1"	882,435	38	614
9-19-52	Jesus Maria	50,759	-	-
9-25-52	Wilmington-Harbor-F. B. V-A - U. P.	235,531	4	272
10-20-52	Midway-Sunset - West Area - General American	507,070	8	833
10-20-52	Wilmington-Harbor-F. B. VI - Ford	753,534	8	833
11- 7-52	Russell Ranch-Main - Russell "15-9"	251,570	11	277
	Total of 1952 Discovery Group:	17,319,630	294	21,078

65499 O—55——15

New Field and Pool Discoveries during Year 1953

Date of Discovery	Names of Fields and Pools	Cumulative Oil Production to 12/31/54	Wells and Production December 1954	
			No. of Producing Wells	Production B/D
12-25-52	Race Track Hill - Jeppi	383,463	14	1,177
1- 7-53	Wilmington-Harbor-F.B. V-B -U.P.	549,168	10	836
1-25-53	Midway-Sunset - Miocene Miscellaneous	32,196	3	53
2-12-53	Tapo Canyon South - Terry	1,655,329	17	2,221
3- 1-53	Belgian Anticline Northwest-Phacoides (included in Carneros)	-	-	-
3- 5-53	Cat Canyon West - Alexander	1,390,290	25	1,407
3-15-53	Midway-Sunset -Santiago- Metson	54,997	5	145
3-19-53	Tejon Flats	8,936	1	16
4- 4-53	Mountain View - Wible (Nozu)	179,982	4	97
4- 4-53	Lost Hills Northwest - W-4 (now Lost Hills - Farnsworth)	9,699	3	23
4-16-53	Olive	52,729	4	94
5- 6-53	Race Track Hill - Chanac (included with Portals-Berry - 1951)	-	-	-
5-16-53	Mission - "6-1"	35,767	2	53
7- 2-53	Lost Hills - Main - Carneros	1,543	-	-
7-14-53	Oxnard - McInnis	41,695	2	160
8- 7-53	Wheeler Ridge - Gordon	345,791	7	786
8-21-53	Elk Hills - "31-S" Area - N	592	-	-
8-24-53	Newport West-Huntington Avenue - C	14,315	1	19
8-29-53	Wheeler Ridge - "276-29"	49,934	4	62
8-29-53	Cymric-Welport Area-Point of Rocks II	99,369	3	332
8-30-53	Rio Bravo - Helbling	102,870	2	178
9-12-53	Brea-Olinda - Olinda East	4,196	1	8
9-14-53	Sansinena - East (now Miocene C & D)	460,640	14	1,998
9-18-53	Whittier - Central Area - Fee 77	189,669	9	722
9-28-53	Bandini	190,030	6	565
9-29-53	Aliso Canyon - Frew	52,609	2	202
10- 7-53	Rincon -Padre Canyon Area - "A-35"	41,669	1	113
10-23-53	Guijarral Hills West - Leda	494,798	4	910
10-28-53	Edison Groves - D-L-K	27,528	12	128
11- 1-53	Pyramid Hills - Orchard	9,927	2	10
11- 2-53	Torrey Canyon - Eocene (combined with Lower Sespe)	-	-	-
11-25-53	Wheeler Ridge - "424-28"	56,097	2	146
11-28-53	Greenacres - Billington	11,395	3	38
12- 4-53	Coles Levee North - Richfield Western Area- "67-29"	2,895	-	-
12- 8-53	Canfield Group - Old River - Stevens	36,705	3	61
12-12-53	Newport West - Off-Shore Area	63,964	5	300
12-13-53	Mission - "5-1"	68,813	1	182
12-16-53	Los Lobos - "27-20"	155,737	7	902
12-22-53	Simi - Strathearn Area	1,741	2	77
12-25-53	Greenacres - Plank	1,266	-	-
12-27-53	Timber Canyon - Loel-Maxwell	12,125	1	36
	Total of 1953 Discovery Group:	6,885,023	182	14,057

New Field and Pool Discoveries during Year 1954

Date of Discovery	Names of Fields and Pools	Cumulative Oil Production to 12/31/54	Wells and Production December 1954	
			No. of Producing Wells	Production B/D
	Deer Creek (first production 12-12-53)	20,354	7	141
1-24-54	Guijarral Hills - Leda North	1,138,836	24	4,846
2- 5-54	Pyramid Hills - Dagany (formerly Dagany Gap Field)	36,736	12	257
2-16-54	Beverly Hills - 20th Century-Fox	2,708	1	3
2-22-54	Long Beach -Airport Area	603,696	13	9,673
3- 1-54	Yorba Linda - Shallow	29,819	11	232
3- 8-54	Huntington Beach-Huntington Avenue Area - Main	55,888	8	646
3-20-54	San Clemente	1,452	1	5
3-20-54	Oxnard - Livingston	184,684	7	1,144
4- 3-54	Belgian Anticline - R-K Area - Point of Rocks III (carried with Northwest Area - Point of Rocks III)	-	-	-
4- 3-54	Fillmore - Spalding	129,832	2	692
4-12-54	Richfield - North Area	7,556	1	36
4-25-54	Alferitz Anticline - Miller	87,151	12	577
5-10-54	Wilmington-Harbor-F.B.VI - U.P.	72,169	3	233
5-11-54	Oxnard - Lucas	1,363	-	-
5-17-54	Tejon-Grapevine - Central-Olcese	246,974	15	2,349
5-24-54	Bandini - Nordstrom Equivalent (carried in Bandini - undifferentiated)	-	-	-
6-11-54	Lost Hills - Saunders (carried with Farnsworth Pool)	-	-	-
6-15-54	Devil's Den - Bates	6,214	3	44
6-26-54	Sunset Beach	25,471	2	121
7-15-54	Tapo Canyon South - Sespe	12,565	5	117
8- 8-54	Wheeler Ridge - RB-2	9,827	1	41
8-31-54	Lost Hills - Overall	2,101	1	17
9-14-54	Castaic Hills - Rynne-Fisher	19,742	1	196
9-19-54	Midway-Sunset -Midway East- Exeter	142,187	6	2,142
11- 7-54	Cascade	3,500	1	56
11-13-54	Huntington Beach-Slough Area-Ramser	23,382	2	525
11-14-54	Cat Canyon West - Thomas	2,818	1	54
12- 9-54	Tejon-Grapevine-Central Area - J.V.	45,811	1	342
12-12-54	Huntington Beach-Slough Area-Lomita Lands	3,058	1	99
12-23-54	Seal Beach - North Block-East Extension - McGrath	2,491	1	80
12-28-54	Tejon-Grapevine-Central Area-Transition	516	1	17
	Total of 1954 Discovery Group:	2,918,901	144	24,685

PRIMARY AND SECONDARY PROJECTS BY GAS AND/OR WATER INJECTION
(WATER DISPOSAL PROJECTS NOTED)

Page A

FIELD AND POOL	UNITIZATION DATE	DATE START	DATE SUSPENDED	TOTAL VOLUME INJECTED AND RATE OF INJECTION FOR MCF AND MCF/D FOR GAS OR BARRELS AND B/D FOR WATER (OR OIL) - SEE LAST COLUMN FOR KEY: CUMULATIVE TO JAN. 1, 1955 MCF-BBBL.	RATE DEC. 1953 MCF/D-B/D	RATE DEC. 1954 MCF/D-B/D	MAXIMUM INJECTION RATE MCF/D-B/D	MAXIMUM INJECTION DATE	TYPE OF OPERATION	MATERIAL INJECTED
SAN JOAQUIN VALLEY REGION										
HEALDTON NORTH										
Temblor	-	July 1938	Nov. 1952(A)	35,007	0	0	36,122	June 1947	S	Gas and Propane
Belridge "64"	2/1/50	Oct. 1941 Feb. 1950	Apr. 1947))	141,689	59,263	56,377	72,272	Oct. 1951	PTM	Gas
"Y" Sand	-	Feb. 1949 Feb. 1950	Oct. 1949))	6,902	5,637	5,635	5,660	Feb. and Apr. 1954	PTM	Gas
BUENA VISTA										
Buena Vista Hills Area Sections 6,8,10-32-24	-	Jan. 1927 Aug. 1928	Dec. 1927) Dec. 1947)	?	-	-	-		GS	Gas
11-D	-	Sept. 1944	Apr. 1954	1,083	625	-	634	Dec. 1950	PTM	Gas
		July 1954		675	-	3,590	4,216	Aug. 1954	Pt.F	Water
1-C	-	May 1954		75	-	622	622	Dec. 1954	Pt.F	Water
McNee	-	Oct. 1943		3,631	1,383	1,139	1,544	May 1953	PTM	Gas
"27-B"	5/1/49	Aug. 1949		50,458	31,139	31,440	14,837	Feb. 1952	PM	Gas
CANAL - Stevens	4/10/51	June 1941		45,760	9,048	4,275	11,554	Apr. 1949	PTM	Gas
COALINGA GROUP										
COALINGA										
Eastside Area									RP-Ex.	Gas
Temblor	-	? 1930	? 193	?	-	-	-		RP	Gas
		May 1945	Jan. 1948	?	-	-	-			
Temblor (II)	-	July 1953		1,225	169	4,690	4,856	June 1954	Pt.F	Water
Temblor (Upper)	-	Jan. 1953		430	3,800	1,311	766	Mar. 1953	Pf.F	Water
COALINGA EAST EXTENSION										
Northeast Area - Eocene	1/1/49	May 1950	Nov. 1953	36,762	0	0	32,221	Feb. 1953	PTM	Gas
Nose Area - Eocene	3/1/51	Apr. 1950 Mar. 1951	Dec. 1950))	25,587	16,421	19,513	22,381	June 1954	PTM	Gas
JACALITOS - Temblor	-	Sept. 1945	Dec. 1946	346	-	-	1,701	June 1946	S	Gas
COLES LEVEE NORTH										
Richfield Western Area										
"21-1"	-	Aug. 1948		16,376	8,946	14,261	14,261	Dec. 1954	PM	Gas
Western "29"	-	Feb. 1943		10,580	3,143	3,586	3,683	Nov. 1954	PTM	Gas
Main Western	-	Nov. 1942		175,983	61,516	63,126	66,100	May 1952	PM	Gas
COLES LEVEE SOUTH										
Stevens F-1	3/1/44	Apr. 1946		34,158	10,922	12,574	17,800	Jan. 1950	C-PTM	Gas
Stevens F-2	3/1/44	Nov. 1945		152,952	51,636	49,512	54,391	May 1953	C-PTM	Gas
CUYAMA GROUP										
CUYAMA SOUTH										
Main Area - Homan	7/1/53	Mar. 1950 July 1953 Jan. 1955	Sept. 1950)) 	15,357 -	24,442 -	26,995 -	29,327 -	June 1954	PTM Pf.F-Ex.	Gas Water
- Hibberd	-	Nov. 1954		-	-	-	-		Pf.F	Water
MORALES CANYON - Clayton	-	Feb. 1952	Sept. 1952	48	-	-	305	Aug. 1952	S-RP-Ex.	Gas
RUSSELL RANCH										
Main Area - Dibblee	9/1/50	Feb. 1949 Sept. 1953		27,102 2,852	19,334 1,769	19,889 13,794	20,036 13,794	Sept. 1954 Dec. 1954	PTM Pf.F	Gas Water
Norris Area - Norris	-	July 1953	Aug. 1954	1,813	4,912	0	6,219	Sept. 1953	Pf.F-Ex.	Water
ELK HILLS										
Main Area - Upper	-	Jan. 1945 Mar. 1953	June 1952))	18,376	6,135	2,565	14,504	July 1945	RP	Gas

PRIMARY AND SECONDARY PROJECTS BY GAS AND/OR WATER INJECTION
(WATER DISPOSAL PROJECTS NOTED)

Page B

PRIMARY AND SECONDARY PROJECTS BY GAS AND/OR WATER INJECTION
(WATER DISPOSAL PROJECTS NOTED)

Page B

FIELD AND POOL	UNITIZATION DATE	DATE START	DATE SUSPENDED	TOTAL VOLUME INJECTED AND RATE OF INJECTION FOR MCF AND MCF/D FOR GAS OR BARRELS AND B/D FOR WATER (OR OIL) - SEE LAST COLUMN FOR KEY: CUMULATIVE TO JAN. 1, 1955 MCF-BBLS.	RATE DEC. 1953 MCF/D-B/D	RATE DEC. 1954 MCF/D-B/D	MAXIMUM INJECTION RATE MCF/D-B/D	MAXIMUM INJECTION DATE	TYPE OF OPERATION	MATERIAL INJECTED
SAN JOAQUIN VALLEY REGION (CONT'D)										
GUERLEY - Stevens	-	Feb. 1944		9,633	2,270	1,976	3,660	Oct. 1951	D-Pf.F	Water
- Rio Bravo-Vedder	8/1/47	Jan. 1948		31,850	13,590	14,453	15,139	May 1954	PM	Gas
		May 1952		2,060	2,330	2,745	2,867	May 1953	Pf.F	Water
KETTLEMAN NORTH DOME										
Temblor	1/31/31	Dec. 1938		466,569	101,735	69,220	134,029	Oct. 1948	RP	Gas
Vaqueros	-	Dec. 1950		3,810	3,797	3,227	4,513	Feb. 1952	PPM	Gas
LOST HILLS - Main	-	Dec. 1946	Apr. 1948	74	-	-	397	July 1947	Pf.F-Ex.	Water
		Oct. 1952		415	748	454	857	Sept. 1953	Pt.F	Water
McDONALD ANTICLINE										
Layman Area	-	Feb. 1953	Sept. 1954	12	15	0	39	May 1953	? Ex.	Gas
McKITTRICK GROUP										
CYMRIC										
Salt Creek Main Area										
Carneros	10/1/48	Dec. 1948		5,071	1,323	2,298	2,758	Oct. 1954	PM	Gas
MIDWAY-SUNSET										
Midway East Area										
19-B	-	Jan. 1944	Oct. 1949	475	-	-	428	Apr. 1945	RP-Ex.	Gas
20-B	-	Aug. 1954		138	-	879	1,434	Sept. 1954	Pf.F	Water
MOUNT POSO GROUP										
MOUNT POSO										
Pyramid Hill	-	Aug. 1952		120	121	151	234	Mar. 1953	Pt.F-Ex.	Water
PALOMA										
Main Area - Paloma	4/1/42	Dec. 1941		274,866	101,130	95,845	122,206	Feb. 1952	C-PPM	Gas
PLEITO CREEK	-	Sept. 1954		5	-	48	48	Oct. and Dec. 1954	D-Pf.F	Water
RIO BRAVO										
Rio Bravo-Vedder	7/1/46	Aug. 1946		48,072	18,463	17,895	20,856	Oct. 1953	PPM	Gas
		Dec. 1949		-	-	-	-		Pf.F	Water
ROSEDALE - Stevens	-	Jan. 1953		533	836	630	1,157	May 1953	D-Pf.F	Water
TEJON GROUP										
TEJON HILLS - 8	-	July 1954		119	-	1,362	1,362	Dec. 1954	Pf.F	Water
TEN SECTION - Stevens	-	June 1954		704	-	6,937	6,937	Dec. 1954	RP-Ex.	Gas
OTHER FIELDS										
ROSEDALE RANCH - Stevens	-	? 1955		-	-	-	-		D-Pf.F	Water
COASTAL REGION										
SANTA BARBARA DISTRICT										
CAPITAN - Erburu	-	Jan. 1946	Sept. 1948)	445	165	77	243	Apr. 1953	S-PM	Gas
		Nov. 1949	)							
KILWOOD - Vaqueros	-	Dec. 1947		5,106	1,856	1,982	3,316	Sept. 1948	PM	Gas
SANTA CLARA VALLEY DISTRICT										
BARDSDALE - Sespe (Shallow)	-	Oct. 1948	Jan. 1952	423	-	-	1,077	Aug. 1951	D-F	Water
- Sespe (Lower)	-	Jan. 1952		460	446	398	482	Mar. 1954	D-F	Water
CASTAIC JUNCTION - #10*	-	Sept. 1954		333	-	3,727	4,877	Sept. 1954	PPM	Gas
DEL VALLE										
East Area - Sherman	-	July 1946		7,975	3,673	4,561	5,680	Oct. 1952	D-F	Water
HONOR RANCHO - Mayside	-	June 1954		767	-	3,910	4,088	Oct. 1954	PPM	Gas

PRIMARY AND SECONDARY PROJECTS BY GAS AND/OR WATER INJECTION
(WATER DISPOSAL PROJECTS BELOW)

Page C

FIELD AND POOL	UNITIZATION DATE	DATE STARTED	DATE SUSPENDED	TOTAL VOLUME INJECTED AND RATE OF INJECTION FOR MCF AND MCF/D FOR GAS OR BARRELS AND B/D FOR WATER (OR OIL) - SEE LAST COLUMN FOR KEY: CUMULATIVE TO JAN. 1, 1955 MMCF-MMBL.	RATE DEC. 1953 MCF/D-B/D	RATE DEC. 1954 MCF/D-B/D	MAXIMUM INJECTION RATE MCF/D-B/D	MAXIMUM INJECTION DATE	TYPE OF OPERATION	MATERIAL INJECTED
COASTAL REGION (CONT'D)										
SANTA CLARA VALLEY DISTRICT (CONT'D)										
REWALL-FORRERO - 1-2-3	-	Dec. 1944		79,779	23,080	18,868	34,501	Jan. 1953	PFM	Gas
- 1-2-3 (1st)	-	July 1952		298	369	436	454	May 1954	D-Pf.F	Water
- 5th	-	Dec. 1952		4,879	5,324	9,102	9,264	Nov. 1953	PFM	Gas
- 6th	-	Dec. 1953		1,569	1,891	5,114	5,114	Dec. 1954	PFM	Gas
- 7th	-	June 1954		39	-	405	483	Nov. 1954	PFM	Gas
OJAI GROUP										
SULPHUR MOUNTAIN NORTH	-	June 1948	Aug. 1949	?	0	0	370	June 1948	PFM	Gas
PLACERITA										
Juanita Area (Intex - Sec. 30)	-	Sept. 1954		67	-	615	615	Dec. 1954	D-Pf.F	Water
Old Area (Sunset - Sec. 31)	-	Feb. 1954		407	-	1,740	1,740	Dec. 1954	D-Pf.F	Water
SOUTH MOUNTAIN - Sespe	-	Aug. 1954		21	-	158	189	Nov. 1954	D-F	Water
SHIELLS CANYON - Shallow Zone	-	Dec. 1952		?	214	-	242	Nov. 1953	Pf.F	Water
		May 1949	Nov. 1952	196	0	0	2,034	Dec. 1952	Pf.F-Ex.	Water
- Intermediate	-	Feb. 1952		?	95	-	80	Apr. 1953	D-Pf.F-Ex.	Water
TAPO-SUREÑA	-	1951			1,173	4,954	5,048	Nov. 1954	Pf.F-Ex.	Water
TORREY CANYON - Sespe	-	Feb. 1949	Oct. 1949	157	-	-	315	Aug. 1949	S	Gas
- First Zone	-	Dec. 1952	)							
- Third Zone	-	Feb. 1953	Oct. 1954	1,288	1,724	2,479	2,479	Dec. 1954	Pf.F-Ex.	Water
WEST MOUNTAIN	-	Mar. 1950		376	338	609	784	Oct. 1954	D	Water
SANTA MARIA DISTRICT										
CASMALIA - Monterey	-	Mar. 1951		2,210	2,984	3,606	4,676	Aug. 1954	D-Pf.F	Water
CAT CANYON GROUP										
CAT CANYON WEST										
Pliocene (S-16)	-	Feb. 1954		417	-	1,278	1,506	Nov. 1954	Ft.F	Water
Pliocene	-	About 1945	Jan. 1954	?	-	-	?	?	D	Water
Los Flores	-	July 1947	May 1949)							
		July 1950	Nov. 1953)	2,923	0	0	2,185	Feb. 1952	PFM	Gas
		Feb. 1954	Nov. 1954	125	0	0	946	Oct. 1952	Pf.F-Ex.	Water
CATO RIDGE - Tognazzini	-	Oct. 1947	Dec. 1950)							
		Nov. 1951	Dec. 1951)	1,861	0	0	3,203	Feb. 1949	D	Water
LOMPOC - Monterey	-	Oct. 1930	Jan. 1931	239	-	-	-		S	Oil
		Nov. 1947	Dec. 1953	15,405	10,645	0	18,188	Dec. 1952	D-Pf.F	Water
		Aug. 1949	Jan. 1949)							
		Oct. 1950	)	104	558	1,006	3,295	Apr. 1952	PFM	Gas
OCCUTT - Zone 3 #	-	Nov. 1950		3,795	3,613	3,822	3,822	Dec. 1954	Pf.F	Water
- Zone 2 & 3 ##	-	Oct. 1953		82	200*	256	256	Dec. 1954	Pf.F-D	Water
SANTA MARIA VALLEY	-	Nov. 1951	Mar. 1952	272	0	0	?	?	Pf.F-Ex.	Water
ZACA CREEK - Monterey	-	Aug. 1952		Unavailable					D	Water
VENTURA DISTRICT										
SAN MIGUELITO - First Grubb	-	Apr. 1940	Aug. 1949	6,781	-	-	4,624	Mar. 1949	OS-PFM	Gas
- Third Grubb	-	1955		-	-	-	-		Pf.F	Water
OTHER COASTAL DISTRICTS										
SAN LUIS OBISPO COUNTY DISTRICT										
EDNA	-	Nov. 1949	Apr. 1951	498	-	-	-		F-Ex.	Water

Prior to January 1, 1954, carried as Zone 1 & 2
Prior to January 1, 1954, carried as Zone 3
* Estimated

PRIMARY AND SECONDARY PROJECTS BY GAS AND/OR WATER INJECTION
(WATER DISPOSAL PROJECTS BELOW)

PRIMARY AND SECONDARY PROJECTS BY GAS AND/OR WATER INJECTION
(WATER DISPOSAL PROJECTS NOTED#)

Page D

FIELD AND POOL	UNITIZATION DATE	DATE START	DATE DISCONTINUED	TOTAL VOLUME INJECTED AND RATE OF INJECTION FOR MCF AND MCF/D FOR GAS OR BARRELS AND B/D FOR WATER (OR OIL) - SEE LAST COLUMN FOR KEY: CUMULATIVE TO JAN. 1, 1955 MCF-MBBL.	RATE DEC. 1953 MCF/D-B/D	RATE DEC. 1954 MCF/D-B/D	MAXIMUM INJECTION RATE MCF/D-B/D	MAXIMUM INJECTION DATE	TYPE OF OPERATION	MATERIAL INJECTED
LOS ANGELES REGION										
BREA-OLINDA	-	Apr. 1928	?	600	-	-	-		S	Gas
		Aug. 1929	Mar. 1930	584	-	-	-		S	Oil
COYOTE WEST										
Main & Upper "99" East	-	Oct. 1952		5,581	8,699	7,913	9,348	June 1953	Pf.F	Water
Lower "99" East	-	Nov. 1945		11,191	3,840	3,581	4,001	Jan. 1954	PPM	Gas
Emery East	-	May 1946		18,982	7,204	6,114	8,735	Oct. 1949	PPM	Gas
Emery West	-	July 1944		59,923	19,856	19,193	21,262	May 1950	PPM	Gas
DOMINGUEZ										
East Central Block										
Pliocene 1	-	July 1954		1,605	-	9,865	9,876	Oct. 1954	Pt.F	Water
Pliocene 3	-	Feb. 1947		3,574	1,003	1,126	3,025	May 1952	Pf.F	Water
West Block										
Pliocene 5	-	Feb. 1947		2,839	1,478	1,220	2,341	Oct. 1951	Pf.F	Water
HUNTINGTON BEACH										
South Area (On-Shore) "A-37"	-	Oct. 1947	Jan. 1951	697	-	-	652	Jan. 1948	GS	Gas
South Area (Off-Shore) Jones	-	Dec. 1951		1,015	1,165	1,382	1,572	June 1954	GS-Ex.	Gas and Propane
INGLEWOOD - Vickers	-	Feb. 1954		565	-	2,204	3,315	Aug. 1954	Pt.F	Water
MONTEBELLO WEST	-	Jan. 1952	May 1952	29	-	-	340	Mar. 1952	LPGS-Ex.	Gas
RICHFIELD - Chapman "47"	-	Mar. 1944	Jan. 1951	650	225	-	300	Dec. 1947	Pf.F.	Water
- Chapman "36"	-	Feb. 1948		1,881	1,122	1,070	1,177	Mar. 1953	Pt.F	Water
		Aug. 1943	Sept. 1946	94	-	-	1,827	Sept. 1943	GS-Ex.	Gas
ROSECRANS										
Athens Area - O'Dea	-	July 1947 Feb. 1950	May 1949)	902	376	400	736	Mar. 1950	GS-Ex.	Gas
TORRANCE	-	Feb. 1950		1,302	1,028	1,003	1,170	Dec. 1952	Pf.F-Ex.	Water
TURNBULL	-	Nov. 1950		156	118	127	132	Nov. 1954	D-F	Water
WILMINGTON										
Terminal Area										
Fault Block III Tar-Ranger	-	Dec. 1954		22	-	1	-		Pf.F	Water
Harbor Area										
Fault Block V-B										
Upper Terminal	-	May 1953		2,150	3,154	3,906	4,163	Nov. 1954	RP	Gas
Upper Terminal (Nx Sand)	-	June 1953		2,039	4,292	6,241	6,241	Dec. 1954	Pf.F	Water
Lower Terminal	-	May 1953		1,507	3,176	2,233	3,176	Dec. 1953	RP	Gas
Fault Block VI Upper Terminal	-	Jan. 1954		606	-	2,309	2,500	Nov. 1954	PPM	Gas

Water disposal into extraneous sands not associated with oil sands are not listed
(A) Injected at intervals

NOTE: Buena Vista Hills, Playa Del Rey, Goleta, and Whittier gas storage data are purposely omitted

Water disposal into extraneous sands not associated with oil sands are not listed
(A) Injected at intervals

NOTE: Buena Vista Hills, Playa Del Rey, Goleta, and Whittier gas storage data are purposely omitted

SYMBOLS ON TYPE OF OPERATION

C = Cycling
S = Storage
Ex. = Experimental or Pilot Operation
PM = Pressure Maintenance
PPM = Partial Pressure Maintenance
RP = Repressure
F = Flood
Pt.F = Pattern Flood
Pf.F = Peripheral Flood
D = Water Disposal
GS = Gas Sweep
LPGS = Low Pressure Gas Sweep

APRIL 1956 — PAGE 1

COMPANY FIELD, AREA OR POOL	CLASS	NUMBER OF WELLS: SHUT IN	PRODUCING	TOTAL	CRUDE PRODUCTION: BARRELS DAILY	BARRELS	EXCESS OR SHORTAGE BARRELS	GAS PRODUCTION M.C.F	NO WELLS: COMP	ABD.
ACRO OIL COMPANY										
WILMINGTON-TOWN LOT-TAR-RANGER-TERMINAL	U		1	1	7	225				
ADKISSON, W.L., OIL COMPANY										
MIDWAY-SUNSET-MIDWAY EAST-SHALLOW	U	4	5	9	62	1,873		2,783		
AECO CORPORATION										
SANTA FE SPRINGS-OTHERS	U	1	1	2	84	2,514		2,414		
WILMINGTON-TOWN LOT-TAR-RANGER-TERMINAL	U	1	6	7	92	2,764		370		
COMPANY TOTAL		2	7	9	176	5,278		2,784		
AIDLIN, JOSEPH W., & BLINN, CECIL S.										
SESPE CANYON GRP-LITTLE SESPE CREEK	U	2		2						
AIRLINE OIL CO.-C. C. HERWICK										
NEWHALL GROUP-TUNNEL	U	2	2	4	14	410				
TORRANCE-DEL AMO	U		1	1	4	130		121		
COMPANY TOTAL		2	3	5	18	540		121		
ALAMO OIL COMPANY										
HUNTINGTON BEACH-SOUTH ON-SHORE-TAR	U		5	5	31	927				
ALBERT, JACOB										
EDISON-PORTALS-FAIRFAX AREA-WICKER	U		1	1	25	756				
FRUITVALE-MARTIN-KERNCO	U	1		1						
COMPANY TOTAL		1	1	2	25	756				
ALBERTSON-BOSWELL OIL CO.										
MONTEBELLO-WEST AREA	U		1	1	13	379		907		
ALEXANDER, HENRY R.										
SAN ARDO-SUPERIOR AREA-AURIGNAC	S		1	1	15	450				
ALFORD & ELLIOTT										
MIDWAY SUNSET-MIDWAY WEST-UPPER	U		3	3	43	1,297				
ALLEY OIL COMPANY										
HUNTINGTON BEACH-SOUTH ON-SHORE-MAIN	U	1		1						
ALLTS OIL COMPANY										
EDISON-WEST AREA	U	1	6	7	96	2,869				
ALMAR OIL COMPANY										
HUNTINGTON BEACH-HUNTINGTON AVE-JONES	S		2	2	75	2,240	5,200*	3,665		
ALTA KNOLLS OIL COMPANY										
FRUITVALE-MARTIN-KERNCO	U	1	3	4	19	577				
A. & M. COMPANY										
HUNTINGTON BEACH-SOUTH ON-SHORE-TAR	U		1	1	5	148				
AMERADA PETROLEUM CORPORATION										
ANT HILL-OLCESE	U	3	22	25	267	7,997				
JEWETT	U	1	4	5	26	784		120		

COMPANY FIELD, AREA OR POOL	CLASS	NUMBER OF WELLS			CRUDE PRODUCTION		EXCESS OR SHORTAGE BARRELS	GAS PRODUCTION M.C.F	NO. WELLS COMP ABD.
		SHUT IN	PRODUCING	TOTAL	BARRELS DAILY	BARRELS			
JEWETT	U	1	4	5	26	784		120	

COMPANY FIELD, AREA OR POOL	CLASS	NUMBER OF WELLS			CRUDE PRODUCTION		EXCESS OR SHORTAGE BARRELS	GAS PRODUCTION M.C.F	NO. WELLS COMP ABD.
		SHUT IN	PRODUCING	TOTAL	BARRELS DAILY	BARRELS			
FRESNO GROUP-HELM-LANARE AREA-MIOCENE	U	1	5	6	671	20,137		15,450	
HELM-LANARE AREA-EOCENE	U	5	1	6	5	153		169	
HELM-MAIN AREA-MIOCENE	S	1	7	8	578	17,337	12,924	7,087	
RIVERDALE-MIOCENE	S	9	23	32	848	25,439	408	39,901	
RIVERDALE-EOCENE	S	1	10	11	266	7,984		7,191	
BLACKWELLS CORNER-TEMBLOR	U	4	5	9	32	950			
NEWPORT WEST-ANAHEIM SUGAR AREA	U		15	15	376	11,275		1,360	
COMPANY TOTAL		25	92	117	3,069	92,056	13,332	71,278	
AMERICAN NAPHTHA-OIL CORPORATION									
KERN RIVER	U		68	68	264	7,922			
AMERICAN OIL SERVICE									
HUNTINGTON BEACH-NORTH AREA-ASHTON	U		1	1	12	375		446	
LONG BEACH-OLD AREA-UPPER POOLS	U		1	1	5	163			
COMPANY TOTAL			2	2	17	538		446	
ANCHOR OIL COMPANY									
MIDWAY-SUNSET-MIDWAY WEST-UPPER	U	5	25	30	95	2,854		467	
ANCHOR OIL CORPORATION									
WILMINGTON-TOWN LOT-TAR-RANGER-TERMINAL	U		3	3	29	858		997	
ANCORA CORPORATION									
PYRAMID HILLS-OTHERS	U	1		1					
ANDERSON, J. M., & BRANSON, J. F.									
HUNTINGTON BEACH-NORTH AREA-ASHTON	U		1	1	9	260			
ANGELUS INVESTMENT CO									
HUNTINGTON BEACH-NORTH AREA-TAR BOLSA	U		1	1	3	100			
ANLAUF, M. G.									
SANTA PAULA GRP-SANTA PAULA CANYON	U	3	3	6	1	45		30	
ANTELOPE OIL COMPANY									
MCDONALD ANTICLINE-LAYMAN AREA	U	1	2	3	1	43			
APEX PETROLEUM CORPORATION, LTD.									
MOUNTAIN VIEW-ARVIN AREA-OTHERS	U	2	2	4	26	770		255	
COYOTE EAST-ANAHEIM	U		2	2	28	842			
EL SEGUNDO	U		3	3	55	1,653			
HUNTINGTON BEACH-HUNTINGTON AVE-JONES	S		3	3	278	8,328	2,925	2,489	1
LONG BEACH-OLD AREA-UPPER POOLS	U	2	14	16	344	10,306		8,031	
ROSECRANS-MAIN AREA-O DEA	U		1	1	22	657		601	
SOUTH AREA-O DEA	U		1	1	21	641		993	
WILMINGTON-TOWN LOT-TAR-RANGER-TERMINAL	U		3	3	69	2,084			
COMPANY TOTAL		4	29	33	843	25,281	2,925	12,369	1
APPLEGATE, GILBERT									
INGLEWOOD-VICKERS	U	1	3	4	3	102		262	

COMPANY FIELD, AREA OR POOL	CLASS	NUMBER OF WELLS: SHUT IN	PRODUCING	TOTAL	CRUDE PRODUCTION: BARRELS DAILY	BARRELS	EXCESS OR SHORTAGE BARRELS	GAS PRODUCTION M.C.F	NO. WELLS COMP	NO. WELLS ABD.
MONTEBELLO-WEST AREA	U		1	1	4	117		223		
COMPANY TOTAL		1	4	5	7	219		485		
ARGENTENA CONSOLIDATED MINING COMPANY										
MOUNTAIN VIEW-ARVIN AREA-OTHERS	U		1	1	8	226				
ARK PROPERTIES, INC.										
OTHER FIELDS-WALNUT	U		1	1	2	50				
ARLINGTON OIL COMPANY										
LONG BEACH-OLD AREA-UPPER POOLS	U		4	4	22	654		402		
ARMSTRONG, L. B., OPERATOR										
FRESNO GROUP-RAISIN CITY-MIOCENE	U		1	1	35	1,046		500		
ARNN, E. S.										
HUNTINGTON BEACH-NORTH AREA-TAR BOLSA	U	1		1						
LONG BEACH-OLD AREA-UPPER POOLS	U		2	2	14	410				
TORRANCE-MAIN	U	1		1						1
COMPANY TOTAL		2	2	4	14	410				1
ARROWHEAD OIL COMPANY, LTD.										
COYOTE EAST-STERN	U		1	1	14	422		30		
RICHFIELD-EAST AREA	U	1	15	16	167	5,018		3,494		
COMPANY TOTAL		1	16	17	181	5,440		3,524		
ARTNELL OIL AND GAS CO. INC.										
KETTLEMAN NORTH DOME-VAQUEROS	S		1	1	26	772				
SANTA MARIA VALLEY-MAIN	U	3	7	10	51	1,541				
BITTERWATER	U	1	7	8	37	1,123				
COMPANY TOTAL		4	15	19	114	3,436				
ARVIN-KERN COMPANY										
MOUNTAIN VIEW-ARVIN AREA-OTHERS	U	1		1						
ASLIN OIL CO., INC.										
TEMBLOR RANCH	U		9	9	88	2,637				
A. & S. PETROLEUM CORPORATION										
HUNTINGTON BEACH-NORTH AREA-ASHTON	U	1	3	4	17	525		418		
ASTON, BERT										
SUNSET BEACH	S		2	2	93	2,782	2,618*			
ATLANTIC OIL COMPANY										
EDISON-PORTALS-FAIRFAX AREA-WICKER	U		1	1	12	374				
POSO CREEK GROUP-PREMIER-MAIN AREA	U		7	7	72	2,164				
CASTAIC HILLS-STERLING	S		2	2	18	552		508		
PLACERITA-JUANITA AREA	U	1	4	5	115	3,436				
BANDINI	S		1	1	51	1,525	2,675*	15,410		
COYOTE WEST-99	U		1	1	7	200		77		

COMPANY FIELD, AREA OR POOL	CLASS	NUMBER OF WELLS: SHUT IN	PRODUCING	TOTAL	CRUDE PRODUCTION: BARRELS DAILY	BARRELS	EXCESS OR SHORTAGE BARRELS	GAS PRODUCTION M.C.F	NO. WELLS COMP	NO. WELLS ABD.
ATLAS OIL COMPANY										
LONG BEACH-OLD AREA-UPPER POOLS	U		1	1	4	120				
AUSTIN, J. E.										
MOUNTAIN VIEW-ARVIN AREA-OTHERS	U		1	1	2	50				
AVILA OIL COMPANY										
AVILA BEACH	S		1	1	4	120				
AVILA OIL COMPANY, THE										
AVILA BEACH	S		1	1	4	120				
AVILA OIL COMPANY, THE, OPERATOR

COMPANY FIELD, AREA OR POOL	CLASS	NUMBER OF WELLS: SHUT IN	PRODUCING	TOTAL	CRUDE PRODUCTION: BARRELS DAILY	BARRELS	EXCESS OR SHORTAGE BARRELS	GAS PRODUCTION M.C.F	NO. WELLS: COMP	ABD.
COYOTE WEST-EMERY WEST	U		1	1	4	117		45		
HUNTINGTON BEACH-HUNTINGTON AVE-JONES	S		14	14	754	22,625	3,516*	30,338	2	
NORTH AREA-ASHTON	U	1		1						
SLOUGH-RAMSER WEST	S		5	5	1,239	37,166	14,141	30,179	1	
SOUTH ON-SHORE-TAR	U	2	5	7	36	1,074				
SOUTH ON-SHORE-A-37	U		1	1	7	216		115		
LONG BEACH-OLD AREA-UPPER POOLS	U	8	9	17	102	3,060		1,782		
OLD AREA-CIRCLE	U		1	1	13	400		275		
MONTEBELLO-EAST AREA-NUTT	U		1	1	10	304		77		
EAST AREA-CRUZ	U	1		1						
MAIN AREA-BALDWIN 1-2-3	U	1	1	2	6	170				
WEST AREA	U		2	2	6	189		1,219		
ROSECRANS-MAIN AREA-MAXWELL-HOGE	U		1	1	8	230		246		
MAIN AREA-O DEA	U	1		1						
SOUTH AREA-O DEA	U	1		1						
SANTA FE SPRINGS-OCONNELL SOUTHEAST	U	1		1						
OTHERS	U	1		1						
TORRANCE-MAIN	U		4	4	27	805		354		
WILMINGTON-TERMINAL-FB-I-TAR-RGR-TERM	U		5	5	105	3,161				
TOWN LOT-TAR-RANGER-TERMINAL	U		22	22	295	8,857		186		
TOWN LOT-FORD	U		7	7	130	3,891		2,379		
COMPANY TOTAL		18	95	113	3,017	90,516	7,950	83,190	3	
ATLANTIC OIL COMPANY & MILLER & FORD										
HUNTINGTON BEACH-NORTH AREA-TAR BOLSA	U		4	4	22	672		103		
NORTH AREA-ASHTON	U		2	2	26	791		399		
SOUTH ON-SHO-E-TAR	U		3	3	33	982				
SOUTH ON-SHORE-A-37	U	1		1						
NEWPORT WEST-SURF AREA-EAST BLOCK	U		1	1	13	402				
COMPANY TOTAL		1	10	11	94	2,847		502		
ATLANTIC OIL COMPANY & SLOSSON, O. M.										
SEAL BEACH-NORTH BLOCK-MCGRATH	S		1	1	8	244		178		
ATLAS OIL COMPANY										
EDISON-WEST AREA	U		1	1	17	507				
FRUITVALE-MARTIN-KERNCO	U		1	1	11	345				
COMPANY TOTAL			2	2	28	852				
ATLAS ROYALTIES, INC.										
KERN RIVER	U		16	16	31	930				
AXIS PETROLEUM COMPANY										
LONG BEACH-OLD AREA-UPPER POOLS	U	1	3	4	116	3,481		2,351		

COMPANY FIELD, AREA OR POOL	CLASS	NUMBER OF WELLS: SHUT IN	PRODUCING	TOTAL	CRUDE PRODUCTION: BARRELS DAILY	BARRELS	EXCESS OR SHORTAGE BARRELS	GAS PRODUCTION M.C.F	NO. WELLS COMP ABD.
TORRANCE-MAIN	U		2	2	16	467			
WILMINGTON-TOWN LOT-TAR-RANGER-TERMINAL	U		4	4	25	737			
COMPANY TOTAL		1	9	10	157	4,685		2,351	
BABCOCK, L. W.									
LONG BEACH-OLD AREA-UPPER POOLS	U	1		1					
BACO OIL COMPANY									
HUNTINGTON BEACH-SOUTH ON-SHORE-JONES	U		1	1	2	58		140	
BAKER, JOHN L.									
KERN RIVER	U		7	7	7	210			
BAKERSFIELD OIL COMPANY									
FRUITVALE-MARTIN-KERNCO	U	1	1	2	5	141			
BAKEWELL, G. G.									
HUNTINGTON BEACH-NORTH AREA-ASHTON	U		1	1	7	209			
BALD EAGLE OIL COMPANY									
KERN RIVER	U		23	23	113	3,400			
BALDWIN, C. K.									
RICHFIELD-EAST AREA	U		2	2	9	264		297	
BAND OIL COMPANY									
MIDWAY-SUNSET-MIDWAY EAST-SHALLOW	U		21	21	301	9,034		2,008	
BANDINI PETROLEUM COMPANY									
SANTA FE SPRINGS-OTHERS	U	3	11	14	221	6,620		7,404	
BANKLINE OIL COMPANY									
GREENACRES-PLANT	U	1		1					
KERN FRONT	U	7		7					
MIDWAY-SUNSET-MIDWAY EAST-SHALLOW	U	1	6	7	77	2,313		2,086	
MIDWAY WEST-UPPER	U.		18	18	53	1,604			
SANTIAGO-METSON	U		5	5	138	4,146			
DEL VALLE-WEST AREA-VASQUEZ-VIDEGAIN	S		1	1	24	707		744	
RAMONA-BLACK	U		2	2	24	727		14,431	
KERN DEL VALLE	S		9	9	159	4,762		2,406	
CAT CANYON WEST-LOS FLORES	S		2	2	90	2,700	600*		
WILMINGTON-HARBOR-FB-IV-RANGER	U		4	4	113	3,394		1,612	
HARBOR-FB-IV-TERMINAL U&L	U		8	8	1,193	35,797		15,352	
HARBOR-FB-IV-UP	U		1	1	5	150		165	
HARBOR-FB-IVD-UP-FORD-237	S		1	1	11	330		245	1
HARBOR-FBV-RANGER	U	1	2	3	51	1,542		621	
TOWN LOT-TAR-RANGER-TERMINAL	U		34	34	348	10,426		6,913	
COMPANY TOTAL		10	93	103	2,286	68,598	600*	44,575	1
BARCO OIL COMPANY									
LONG BEACH-OLD AREA-UPPER POOLS	U		1	1	12	347		112	

COMPANY FIELD, AREA OR POOL	CLASS	NUMBER OF WELLS SHUT IN	PRODUCING	TOTAL	CRUDE PRODUCTION BARRELS DAILY	BARRELS	EXCESS OR SHORTAGE BARRELS	GAS PRODUCTION M.C.F	NO. WELLS COMP ABD.
BARCO OIL COMPANY									
LONG BEACH-OLD AREA-UPPER POOLS	U		1	1	12	347		112	
BARCUS, WALTER I.									
WILMINGTON-TOWN LOT-TAR-RANGER-TERMINAL	U		1	1	14	415		130	
BARDEEN, H. A.									
OTHER FIELDS-WALNUT	U	1	2	3	11	316			
BARDSDALE OIL COMPANY									
BARDSDALE-EOCENE	U		1	1	22	661		7,500	
BARKETT, MIKE									
NEWHALL GROUP-ELSMERE	U		1	1	2	60			
BARNHART-MORROW CONSOLIDATED									
SANTA FE SPRINGS-OTHERS	U		2	2	11	316		811	
BARRATT, M., & BYSSHE, ERNEST W., JR.									
EDISON-WEST AREA	U		6	6	151	4,527		3,470	
RACE TRACK-PORTALS-BERRY&CHANAC	U		2	2	8	250			
RACE TRACK HILL-JEWETT	S		2	2	82	2,470		4,374	
RACE TRACK HILL-PYRAMID HILL	S		2	2	77	2,300		5,604	
RACE TRACK HILL-VEDDER	S		1	1	24	726		1,580	
KERN RIVER	U		3	3	29	858			
BARDSDALE-EOCENE	U		4	4	90	2,696		10,420	
PLACERITA-JUANITA AREA	U		1	1	42	1,259			
HUNTINGTON BEACH-HUNTINGTON AVE-JONES	S		9	9	367	11,014	401*	11,794	3
ROSECRANS-MAIN AREA-O DEA	U		1	1	7	206		922	
WILMINGTON-TOWN LOT-TAR-RANGER-TERMINAL	U		4	4	52	1,546		1,096	
COMPANY TOTAL			35	35	929	27,852	401*	39,260	3
BARTEE, F. R.									
LONG BEACH-OLD AREA-UPPER POOLS	U	1	4	5	13	397		439	
OLD AREA-DE SOTO-SOUTH FLANK	U	1		1					
COMPANY TOTAL		2	4	6	13	397		439	
BARTHOLOMAE CORPORATION									
COYOTE EAST-ANAHEIM	U		5	5	98	2,941		2,038	
STERN	U		23	23	614	18,427		17,434	
LONG BEACH-OLD AREA-UPPER POOLS	U		4	4	113	3,387		2,126	
COMPANY TOTAL			32	32	825	24,755		21,598	
BASIN OIL CO. OF CALIFORNIA									
POTRERO-EAST AREA	U	2	15	17	323	9,685		15,428	
INGLEWOOD CITY AREA	U	1	15	16	427	12,822		87,966	
RICHFIELD-EAST AREA	U		2	2	24	730		20	
COMPANY TOTAL		3	32	35	774	23,237		103,414	
BATTAGLIA, WOLFSON, & BARNES									
HUNTINGTON BEACH-HUNTINGTON AVE-JONES	S		1	1	10	300	10	300	1

COMPANY FIELD, AREA OR POOL	CLASS	NUMBER OF WELLS: SHUT IN	PRODUCING	TOTAL	CRUDE PRODUCTION: BARRELS DAILY	BARRELS	EXCESS OR SHORTAGE BARRELS	GAS PRODUCTION M.C.F	NO. WELLS COMP ABD.
BAUER, J. HAROLD									
KERN RIVER	U		2	2	25	765			
BAUER OIL COMPANY									
EDISON-WEST AREA	U		1	1	8	231			
BAUERDORF, GEORGE F., TRUSTEE									
LONG BEACH-OLD AREA-DE SOTO SOUTH FLANK	U		1	1	4	129		603	
BAUGHMAN, ELWOOD D.									
RICHFIELD-EAST AREA	U		1	1	6	181		400	
BAY SHORE OIL COMPANY, INC.									
HUNTINGTON BEACH-SOUTH ON-SHORE-MAIN	U	1		1					
NEWPORT WEST-ALDRICH AREA-B	U		3	3	25	759			
ANAHEIM SUGAR AREA	U		5	5	205	6,163			
COMPANY TOTAL		1	8	9	230	6,922			
B & B OIL COMPANY									
LONG BEACH-OLD AREA-UPPER POOLS	U		1	1	9	263			
B & C OIL COMPANY									
HUNTINGTON BEACH-NORTH AREA-ASHTON	U	1	1	2	21	644		403	
B & D OIL CORPORATION									
HUNTINGTON BEACH-SOUTH ON-SHORE-TAR	U		1	1	8	233			
BEACH PETROLEUM CORPORATION, LTD.									
LONG BEACH-OLD AREA-UPPER POOLS	U		3	3	67	2,004		185	
BEAL, CARLTON, AGENT FOR OWNERS OF MISSION ADRIAN LEASE									
ALISO CANYON-MISSION ADRIAN	U	1	1	2	3	92		2,740	
SESNON	S		3	3	133	3,989	419	3,683	
COMPANY TOTAL		1	4	5	136	4,081	419	6,423	
BEAL, CARLTON, ASSOCIATES									
SANTA FE SPRINGS-OTHERS	U		1	1	25	764		1,891	
BEATTY, C. E.									
LONG BEACH-OLD AREA-UPPER POOLS	U		1	1	13	405		100	
BEAUDETTE, E. A., JR.									
TORRANCE-DEL AMO	U		1	1	3	87			
BELL, HOWARD H., JR.									
COALINGA-WESTSIDE AREA-TEMBLOR	U	3	4	7	8	250			
OIL CITY-CRETACEOUS	U	6		6					
EDISON-MAIN AREA-UPPER	U		1	1	2	75			
RACE TRACK HILL-JEWETT	S	2		2					
COMPANY TOTAL		11	5	16	10	325			
BELL PETROLEUM COMPANY									
CASTAIC HILLS-STERLING	S		11	11	543	16,279	207	57,230	

		NUMBER OF WELLS			CRUDE PRODUCTION				
		SHUT					EXCESS OR	GAS	
COMPANY FIELD, AREA OR POOL	CLASS	IN	PRODUCING	TOTAL	BARRELS DAILY	BARRELS	SHORTAGE BARRELS	PRODUCTION M.C.F	NO. WELLS COMP ABD.
BELL PETROLEUM COMPANY									
CASTAIC HILLS-UPPER	S		1	1	3	87			
COMPANY TOTAL			12	12	546	16,366	207	57,230	
BELLEVUE OIL COMPANY									
LONG BEACH-OLD AREA-UPPER POOLS	U		1	1	9	263			
BELLEVUE OIL COMPANY, THE									
LONG BEACH-OLD AREA-UPPER POOLS	U		1	1	9	263			
BELLEVUE OIL COMPANY, THE, AGENT FOR OWNERS OF MISSION ADRIAN LEASE									
ALISO CANYON-MISSION ADRIAN	U	1	1	2	3	92		2,740	
SESNON	S		3	3	133	3,989	419	3,683	
COMPANY TOTAL		1	4	5	136	4,081	419	6,423	
BELLEVUE OIL COMPANY, THE, AGENT FOR OWNERS OF MISSION ADRIAN LEASE									
ALISO CANYON-MISSION ADRIAN	U	1	1	2	3	92		2,740	
SESNON	S		3	3	133	3,989	419	3,683	
COMPANY TOTAL		1	4	5	136	4,081	419	6,423	
BELLEVUE OIL COMPANY, THE, AGENT FOR OWNERS OF MISSION ADRIAN LEASE, ET AL									
ALISO CANYON-MISSION ADRIAN	U	1	1	2	3	92		2,740	
SESNON	S		3	3	133	3,989	419	3,683	
COMPANY TOTAL		1	4	5	136	4,081	419	6,423	
BELLEVUE OIL COMPANY, THE, AGENT FOR OWNERS OF MISSION ADRIAN LEASE, ET AL									
ALISO CANYON-MISSION ADRIAN	U	1	1	2	3	92		2,740	
SESNON	S		3	3	133	3,989	419	3,683	
COMPANY TOTAL		1	4	5	136	4,081	419	6,423	
BELLEVUE OIL COMPANY, THE, AGENT FOR OWNERS OF MISSION ADRIAN LEASE, ET AL									
ALISO CANYON-MISSION ADRIAN	U	1	1	2	3	92		2,740	
SESNON	S		3	3	133	3,989	419	3,683	
COMPANY TOTAL		1	4	5	136	4,081	419	6,423	
BELLEVUE OIL COMPANY, THE, AGENT FOR OWNERS OF MISSION ADRIAN LEASE, ET AL									
ALISO CANYON-MISSION ADRIAN	U	1	1	2	3	92		2,740	
SESNON	S		3	3	133	3,989	419	3,683	
COMPANY TOTAL		1	4	5	136	4,081	419	6,423	
BELLEVUE OIL COMPANY, THE, AGENT FOR OWNERS OF MISSION ADRIAN LEASE, ET AL									
ALISO CANYON-MISSION ADRIAN	U	1	1	2	3	92		2,740	
SESNON	S		3	3	133	3,989	419	3,683	
COMPANY TOTAL		1	4	5	136	4,081	419	6,423	

COMPANY FIELD, AREA OR POOL	CLASS	NUMBER OF WELLS: SHUT IN	PRODUCING	TOTAL	CRUDE PRODUCTION: BARRELS DAILY	BARRELS	EXCESS OR SHORTAGE BARRELS	GAS PRODUCTION M.C.F	NO. WELLS COMP ABD.
ROSECRANS-SOUTH AREA-O DEA	U		1	1	1	45		174	
OTHER FIELDS-LEFFINGWELL	U		1	1	22	666		632	
COMPANY TOTAL			13	13	566	16,990	207	58,036	
BELOIL CORPORATION, LTD.									
HUNTINGTON BEACH-HUNTINGTON AVE-JONES	S		9	9	649	19,465	5,088*	28,095	2
NORTH AREA-TAR BOLSA	U		12	12	83	2,480		567	
NORTH AREA-ASHTON	U		5	5	44	1,318		1,094	
SOUTH ON-SHORE-JONES	U		1	1	12	347		647	
SOUTH ON-SHORE-MAIN	U		11	11	114	3,412		2,406	
SOUTH OFF-SHORE-MAIN	U		3	3	90	2,688		1,752	
COMPANY TOTAL			41	41	992	29,710	5,088*	34,561	2
BELRIDGE OIL COMPANY									
BELRIDGE NORTH-SHALLON	U	4	5	9	53	1,600		100	
TEMBLOR	S	12	5	17	193	5,800		102,300	
R SAND	S	1	7	8	57	1,700		295,800	
Y SAND	S	1	3	4	253	7,600	1,704	146,300	
BELRIDGE SOUTH	U	139	465	604	5,610	168,300		27,000	11
COMPANY TOTAL		157	485	642	6,166	185,000	1,704	571,500	11
BENDER, E. A.									
CYMRIC-SHEEP SPRINGS AREA-54-21	U	1		1					
SHEEP SPRINGS AREA-CARNEROS	U		2	2	42	1,246			
SHEEP SPRINGS AREA-OCEANIC	U		1	1	1	23			
ROUND MOUNTAIN GROUP-ALMA-VEDDER	U		2	2	5	158			
TEN SECTION-STEVENS	S		1	1	166	4,973	877*		
COMPANY TOTAL		1	6	7	214	6,400	877*		
BENDER, E. A., DRILLING COMPANY									
ROUND MOUNTAIN GROUP-SHARKTOOTH-VEDDER	U		18	18	199	5,983		110	
BENITO-HUNTINGTON OIL CO.									
HUNTINGTON BEACH-SOUTH OFF-SHORE-MAIN	U		1	1	22	670		449	
BENNIGSDORF, L. H.									
HUNTINGTON BEACH-NORTH AREA-ASHTON	U	1	2	3	16	486		258	
BERING, R. E.									
SANSINENA-WEST-MAIN BLOCK-MIOCENE C-D	S		4	4	144	4,316	416	3,285	
WEST-CURTIS BLOCK-MIOCENE C-D	U	1		1					
OTHER AREAS-PLIOCENE	U	7		7					
COMPANY TOTAL		8	4	12	144	4,316	416	3,285	
BERNSTEIN-BOONE & SATCHELL									
WILMINGTON-HARBOR-FB-IVD-UP-FORD-237	S		1	1	19	584		857	
BERNSTEIN TRUST									
WILMINGTON-TOWN LOT-TAR-RANGER-TERMINAL	U		2	2	22	651		325	

COMPANY FIELD, AREA OR POOL	CLASS	NUMBER OF WELLS: SHUT IN	PRODUCING	TOTAL	CRUDE PRODUCTION: BARRELS DAILY	BARRELS	EXCESS OR SHORTAGE BARRELS	GAS PRODUCTION M.C.F	NO. WELLS COMP ABD.
BERRY & EWING									
MIDWAY-SUNSET-MIDWAY WEST-UPPER	U		20	20	284	8,522			
BERRY HOLDING COMPANY									
EDISON-MAIN AREA-UPPER	U		2	2	10	300			
MIDWAY-SUNSET-MIDWAY WEST-UPPER	U		25	25	154	4,630			
COMPANY TOTAL			27	27	164	4,930			
BERRY OIL COMPANY									
BELRIDGE SOUTH	U	5	33	38	84	2,522			
MIDWAY-SUNSET-MIDWAY EAST-SHALLOW	U		7	7	58	1,754			
MIDWAY WEST-UPPER	U		26	26	256	7,673			
COMPANY TOTAL		5	66	71	398	11,949			
BERRY, PEARL E.									
KERN RIVER	U		5	5	20	600			
BERRYHILL, ROY J.									
HUNTINGTON BEACH-NORTH AREA-ASHTON	U		1	1	2	65			
SOUTH ON-SHORE-TAR	U		1	1	2	52			
SOUTH ON-SHORE-MAIN	U		1	1	2	60			
COMPANY TOTAL			3	3	6	177			
BEV OIL COMPANY, THE									
LONG BEACH-OLD AREA-UPPER POOLS	U		1	1	6	170		133	
BEVER, FRED									
TORRANCE-MAIN	U		4	4	11	342			
BEVER, FRED, & LIPPERT, FRED									
TORRANCE-MAIN	U		1	1	3	99			
BEVERLY OIL COMPANY									
OTHER FIELDS-SALT LAKE	U		7	7	194	5,833			
BEVO DRILLING COMPANY									
HUNTINGTON BEACH-NORTH AREA-TAR BOLSA	U		1	1	6	188			
NORTH AREA-ASHTON	U	1		1					
COMPANY TOTAL		1	1	2	6	188			
BEYL, FREDERICK C.									
INGLEWOOD-MOYNIER	U	1		1					
B. H. & C. OIL COMPANY									
MIDWAY-SUNSET-MIDWAY WEST-UPPER	U	1	5	6	1	20		120	
BIG FOUR OIL COMPANY									
LONG BEACH-OLD AREA-UPPER POOLS	U		3	3	56	1,666		706	
BIG TEN OIL COMPANY									
MIDWAY-SUNSET-MIDWAY WEST-UPPER	U		16	16	233	6,995			
BINNS-HARRIS OIL COMPANY									
PLACERITA-OLD AREA	U		1	1	7	215			

COMPANY FIELD, AREA OR POOL	CLASS	NUMBER OF WELLS: SHUT IN	PRODUCING	TOTAL	CRUDE PRODUCTION: BARRELS DAILY	BARRELS	EXCESS OR SHORTAGE BARRELS	GAS PRODUCTION M.C.F	NO. WELLS COMP ABD.
BIRCH, ROBERT									
HUNTINGTON BEACH-NORTH AREA-ASHTON	U		1	1	2	65			
SOUTH ON-SHORE-TAR	U		1	1	2	52			
SOUTH ON-SHORE-MAIN	U		1	1	2	60			
COMPANY TOTAL			3	3	6	177			
BIRCH, ROBERT, & MARTIN, ROBERT									
HUNTINGTON BEACH-NORTH AREA-ASHTON	U		1	1	2	65			
SOUTH ON-SHORE-TAR	U		1	1	2	52			
SOUTH ON-SHORE-MAIN	U		1	1	2	60			
COMPANY TOTAL			3	3	6	177			
BIRCH, ROBERT, & MARTIN, ROBERT, & MARTIN, ROBERT									
HUNTINGTON BEACH-NORTH AREA-ASHTON	U		1	1	2	65			
SOUTH ON-SHORE-TAR	U		1	1	2	52			
SOUTH ON-SHORE-MAIN	U		1	1	2	60			
COMPANY TOTAL			3	3	6	177			
BIRCH, ROBERT, & MARTIN, ROBERT, & MARTIN, ROBERT, & MARTIN, ROBERT									
HUNTINGTON BEACH-NORTH AREA-ASHTON	U		1	1	2	65			
SOUTH ON-SHORE-TAR	U		1	1	2	52			
SOUTH ON-SHORE-MAIN	U		1	1	2	60			
COMPANY TOTAL			3	3	6	177			
BIRCH, ROBERT, & MARTIN, ROBERT, & MARTIN, ROBERT, & MARTIN, ROBERT, & MARTIN, ROBERT									
HUNTINGTON BEACH-NORTH AREA-ASHTON	U		1	1	2	65			
SOUTH ON-SHORE-TAR	U		1	1	2	52			
SOUTH ON-SHORE-MAIN	U		1	1	2	60			
COMPANY TOTAL			3	3	6	177			
BIRCH, ROBERT, & MARTIN, ROBERT, & MARTIN, ROBERT, & MARTIN, ROBERT, & MARTIN, ROBERT, & MARTIN, ROBERT									
HUNTINGTON BEACH-NORTH AREA-ASHTON	U		1	1	2	65			
SOUTH ON-SHORE-TAR	U		1	1	2	52			
SOUTH ON-SHORE-MAIN	U		1	1	2	60			
COMPANY TOTAL			3	3	6	177			
BIRCH, ROBERT, & MARTIN, ROBERT, & MARTIN, ROBERT, & MARTIN, ROBERT, & MARTIN, ROBERT, & MARTIN, ROBERT, & MARTIN, ROBERT									
HUNTINGTON BEACH-NORTH AREA-ASHTON	U		1	1	2	65			
SOUTH ON-SHORE-TAR	U		1	1	2	52			
SOUTH ON-SHORE-MAIN	U		1	1	2	60			
COMPANY TOTAL			3	3	6	177			
BIRCH, ROBERT, & MARTIN, ROBERT, & MARTIN, ROBERT, & MARTIN, ROBERT, & MARTIN, ROBERT, & MARTIN, ROBERT, & MARTIN, ROBERT, & MARTIN, ROBERT									
HUNTINGTON BEACH-NORTH AREA-ASHTON	U		1	1	2	65			
SOUTH ON-SHORE-TAR	U		1	1	2	52			
SOUTH ON-SHORE-MAIN	U		1	1	2	60			
COMPANY TOTAL			3	3	6	177			
BIRCH, ROBERT, & MARTIN, ROBERT, & MARTIN, ROBERT, & MARTIN, ROBERT, & MARTIN, ROBERT, & MARTIN, ROBERT, & MARTIN, ROBERT, & MARTIN, ROBERT, & MARTIN, ROBERT									
HUNTINGTON BEACH-NORTH AREA-ASHTON	U		1	1	2	65			
SOUTH ON-SHORE-TAR	U		1	1	2	52			
SOUTH ON-SHORE-MAIN	U		1	1	2	60			
COMPANY TOTAL			3	3	6	177			

COMPANY FIELD, AREA OR POOL	CLASS	NUMBER OF WELLS: SHUT IN	PRODUCING	TOTAL	CRUDE PRODUCTION: BARRELS DAILY	BARRELS	EXCESS OR SHORTAGE BARRELS	GAS PRODUCTION M.C.F	NO. WELLS COMP. ABD.
BINNS-HARRIS OIL COMPANY									
PLACERITA-OLD AREA	U		1	1	7	215			

COMPANY FIELD, AREA OR POOL	CLASS	NUMBER OF WELLS: SHUT IN	PRODUCING	TOTAL	CRUDE PRODUCTION: BARRELS DAILY	BARRELS	EXCESS OR SHORTAGE BARRELS	GAS PRODUCTION M.C.F	NO. WELLS COMP. ABD.
BIRCH RANCH AND OIL COMPANY									
MIDWAY-SUNSET-MIDWAY EAST-MARICOPA FLAT	U		3	3	34	1,033		6,625	
BISHOP, BRADFORD									
MOUNT POSO GROUP-DORSEY-VEDDER	U	2	9	11	67	2,000			
SECTION 18-VEDDER	U	1		1					
COMPANY TOTAL		3	9	12	67	2,000			
BISHOP OIL COMPANY									
KERN FRONT	U		21	21	195	5,842		500	
KERN RIVER	U		82	82	112	3,362			
MOUNT POSO GROUP-DOMINION-VEDDER	U		4	4	18	534			
MOUNT POSO-VEDDER	U		4	4	79	2,370			
ROUND MT GROUP-COFFEE CANYON-VEDDER	U	5	24	29	215	6,456			
PYRAMID-VEDDER	U		2	2	8	240			
ROUND MOUNTAIN-VEDDER	U	4	16	20	147	4,416			
CAT CANYON EAST-SISQUOC-MONTEREY	U	5	6	11	126	3,795			
EDNA-TIBER AREA	U	2	3	5	49	1,472			
OAK PARK AREA	U		1	1		4			
RICHFIELD-WEST AREA	U	1	6	7	72	2,149		4,538	
WILMINGTON-TOWN LOT-TAR-RANGER-TERMINAL	U	1	16	17	208	6,247		8,040	
COMPANY TOTAL		18	185	203	1,229	36,887		13,078	
B-K-S OIL COMPANY									
TEJON GRAPEVINE-CENTRAL AREA-S-P	U		8	8	238	7,129		1,635	
CENTRAL AREA-RESERVE	U		1	1	20	591		205	
CENTRAL AREA-V	U		2	2	25	740		205	
COMPANY TOTAL			11	11	283	8,460		2,045	
B & L PRODUCTION COMPANY									
BELRIDGE SOUTH	U		50	50	840	25,197			
BLACK OIL CO., CITY #2									
HUNTINGTON BEACH-SOUTH ON-SHORE-A-37	U		1	1	4	128			
BLANCK, JOSEPHINE M.									
MIDWAY-SUNSET-MIDWAY EAST-SHALLOW	U		1	1	5	143			
BLOCK OIL COMPANY									
EL SEGUNDO	U		9	9	51	1,532			
INGLEWOOD-VICKERS	U		6	6	54	1,617			
PLAYA DEL REY-VENICE AREA	U		7	7	51	1,535		16,451	
COMPANY TOTAL			22	22	156	4,684		16,451	
B. & M. OIL COMPANY, INC.									
MIDWAY-SUNSET-MIDWAY EAST-SHALLOW	U	2	17	19	257	7,705		5,568	
BOLSA CHICA OIL CORPORATION									
EDISON-EDISON GROVES AREA-D-L-K	U		2	2	15	461			

65499 O—55——16

COMPANY FIELD, AREA OR POOL	CLASS	NUMBER OF WELLS: SHUT IN	PRODUCING	TOTAL	CRUDE PRODUCTION: BARRELS DAILY	BARRELS	EXCESS OR SHORTAGE BARRELS	GAS PRODUCTION M.C.F	NO WELLS COMP ABD
PIRU GROUP-TEMESCAL	U		6	6	91	2,740		1,020	
SANTA MARIA VALLEY-MAIN	U		2	2	76	2,266			
VENTURA-C-BLOCK	U	1	1	2	9	260		650	
D-3	U	1	2	3	57	1,716		3,261	
D-4	U		1	1	10	315		650	
COMPANY TOTAL		2	14	16	258	7,758		5,581	
BOLTON, O. L., COMPANY									
HUNTINGTON BEACH-SOUTH ON-SHORE-TAR	U		18	18	104	3,126		360	
SOUTH ON-SHORE-JONES	U		1	1	7	221		309	
COMPANY TOTAL			19	19	111	3,347		669	
BOLTON-ROOD NO. 1									
HUNTINGTON BEACH-SOUTH ON-SHORE-MAIN	U		1	1	5	139			
BOONE & SATCHELL									
WILMINGTON-HARBOR-FB-IVD-UP-FORD-237	S		1	1	8	245		345	
BOSWELL PERFORATING COMPANY									
LONG BEACH-OLD AREA-UPPER POOLS	U	1	4	5	21	638		603	
BOSWELL PETROLEUM COMPANY									
LONG BEACH-OLD AREA-UPPER POOLS	U		2	2	9	285		647	
RICHFIELD-EAST AREA	U		3	3	16	480		1,500	
COMPANY TOTAL			5	5	25	765		2,147	
BOYVEY AND DRAPER									
HUNTINGTON BEACH-SOUTH ON-SHORE-TAR	U		1	1	3	98		5	
B. & R. OIL COMPANY									
MIDWAY SUNSET-MIDWAY WEST-UPPER	U	1	4	5	12	368			
POSO CREEK GROUP-MCVAN	U	1	5	6	16	474			
COMPANY TOTAL		2	9	11	28	842			
BRADFORD, A. H.									
RICHFIELD-EAST AREA	U	1	12	13	108	3,240		1,927	
BRADFORD BROS., INC.									
RICHFIELD-EAST AREA	U		1	1	2	51		30	
WEST AREA	U	1	1	2	5	150		90	
COMPANY TOTAL		1	2	3	7	201		120	
BRADFORD OIL COMPANY									
KERN RIVER	U	1	6	7	16	469			
BRADLEY & MENVEG									
ROSECRANS-ATHENS AREA-UPPER	U		1	1	45	1,358		259	
BRADLEY, MUHL & ASSOCIATES									
HUNTINGTON BEACH-NORTH AREA-ASHTON	U		4	4	116	3,480		1,686	
BRAYTON-CLOCK									
HUNTINGTON BEACH-NORTH AREA-TAR BOLSA	U		1	1	23	687			

COMPANY FIELD, AREA OR POOL	CLASS	NUMBER OF WELLS SHUT IN	NUMBER OF WELLS PRODUCING	NUMBER OF WELLS TOTAL	CRUDE PRODUCTION BARRELS DAILY	CRUDE PRODUCTION BARRELS	EXCESS OR SHORTAGE BARRELS	GAS PRODUCTION M.C.F	NO. WELLS COMP. ABD.
HUNTINGTON BEACH-NORTH AREA-TAR BOLSA	U		1	1	23	687			
BRAYTON-PHILLIPS OIL CORPORATION									
PLACERITA-JUANITA AREA	U		1	1	24	732			
BRAYTON-ROOD & DOLLEY									
SEAL BEACH-ALAMITOS AREA	U		1	1	14	418		293	
BRAYTON, WM. H.									
HUNTINGTON BEACH-NORTH AREA-TAR BOLSA	U		4	4	57	1,709			
BREA CANON OIL COMPANY									
BREA OLINDA-BREA AREA-OTHERS	U	13	41	54	989	29,678		33,487	1
BRECKENRIDGE, B. B.									
PLACERITA-OLD AREA	U		3	3	21	620			
BRIGGS, HARRY H.									
LONG BEACH-OLD AREA-UPPER POOLS	U		3	3	12	358		1,357	
BRIGHT, ROSE L., & KUMLER, WILLIAM L.									
HUNTINGTON BEACH-SOUTH ON-SHORE-TAR	U		1	1	9	277			
BRIGHTON PETROLEUM CORPORATION									
LONG BEACH-OLD AREA-UPPER POOLS	U		1	1	7	213			
BRITISH-AMERICAN OIL PRODUCING COMPANY,									
VENTURA-D-5 WEST	S		2	2	95	2,839	829	8,011	
D-5,6 NORTH	S		4	4	186	5,589	168	13,825	
D-6 WEST	S		7	7	334	10,032	1,290	30,314	
D-7 D-8	S		6	6	470	14,097		19,320	
COMPANY TOTAL			19	19	1,085	32,557	2,287	71,470	
BRITISH-AMERICAN OIL PRODUCING COMPANY, & CAPITAL COMPANY									
EDISON RACE HILL-PORTALS-BERRY&CHANAC	U		3	3	22	653		131	
RACE TRACK HILL-JEWETT	S	1	11	12	83	2,490		7,899	
RACE TRACK HILL-PYRAMID HILL	S		10	10	170	5,112		16,738	
MOUNTAIN VIEW-ARVIN AREA-OTHERS	U		4	4	40	1,190		1,932	
TEJON GRAPEVINE-WESTERN AREA-S	U		20	20	332	9,958		485	
COMPANY TOTAL		1	48	49	647	19,403		27,185	
BRITISH-AMERICAN OIL PRODUCING COMPANY, & TEXAS COMPANY, THE									
ALONDRA	U		5	5	183	5,484		4,154	
BROOKLINE OIL COMPANY									
WILMINGTON-TERMINAL-FB-I-TAR-RGR.-TERM	U	1	3	4	32	970			
BROOKNEL PETROLEUM COMPANY									
CONEJO	U	4		4					
BROOKS, A. W., PRODUCTION									
LONG BEACH-OLD AREA-UPPER POOLS	U		5	5	39	1,159		950	

COMPANY FIELD, AREA OR POOL	CLASS	NUMBER OF WELLS: SHUT IN	NUMBER OF WELLS: PRODUCING	NUMBER OF WELLS: TOTAL	CRUDE PRODUCTION: BARRELS DAILY	CRUDE PRODUCTION: BARRELS	EXCESS OR SHORTAGE BARRELS	GAS PRODUCTION M.C.F	NO WELLS COMP ABD.
BROOKS, E. S.									
LONG BEACH-OLD AREA-UPPER POOLS	U		1	1				60	
BROOKS, J. B.									
PETALUMA	U	1		1					
BROWN, A. G.									
LAWNDALE-UPPER POOL	U		1	1	3	95		3	
BROWN, D. L.									
HUNTINGTON BEACH-NORTH AREA-ASHTON	U		3	3	17	504		237	
LONG BEACH-OLD AREA-UPPER POOLS	U	1	3	4	55	1,656		460	
COMPANY TOTAL		1	6	7	72	2,160		697	
BROWN, R. ALLEN									
LONG BEACH-OLD AREA-UPPER POOLS	U	1		1					
BUCKEYE UNION OIL COMPANY									
SANTA FE SPRINGS-OTHERS	U		3	3	38	1,150		525	
BUFFALO OIL COMPANY									
PLACERITA-JUANITA AREA	U	1		1					
BULLION MINING COMPANY									
ROUND MOUNTAIN GROUP-ALMA-VEDDER	U		8	8	36	1,077			
BURNETT COMPANY									
EDISON-WEST AREA	U		1	1	45	1,341			
BURNETT OIL COMPANY									
RICHFIELD-EAST AREA	U		1	1	10	303			
BURNS OIL COMPANY									
CONEJO	U		6	6	1	30			
BUSH, I. M., ESTATE OF									
LONG BEACH-OLD AREA-UPPER POOLS	U		1	1	16	495		870	
BUSH, W. W.									
LONG BEACH-OLD AREA-UPPER POOLS	U		2	2	21	632			
BUTLER & ASSOCIATES									
TEJON GRAPEVINE-CENTRAL AREA-TRANSITION	S		1	1	10	315		48	
BUTLER BROTHERS OIL COMPANY									
POSO CREEK GROUP-MCVAN	U	2		2					
CABRILLO OIL CORPORATION, LTD.									
KERN RIVER	U	4	14	18	26	770			
CADILLAC OIL COMPANY									
HUNTINGTON BEACH-SOUTH ON-SHORE-TAR	U	6	6	12	47	1,408			
SOUTH ON-SHORE-MAIN	U	1	1	2	8	247			
COMPANY TOTAL		7	7	14	55	1,655			
CAJO OIL COMPANY									
HUNTINGTON BEACH-NORTH AREA-ASHTON	U	1		1					

COMPANY FIELD, AREA OR POOL	CLASS	NUMBER OF WELLS: SHUT IN	PRODUCING	TOTAL	CRUDE PRODUCTION: BARRELS DAILY	BARRELS	EXCESS OR SHORTAGE BARRELS	GAS PRODUCTION M.C.F	NO. WELLS COMP ABD.
CALADA MATERIALS COMPANY									
WILMINGTON-TOWN LOT-TAR-RANGER-TERMINAL	U		1	1	31	932			
CALCRUDE PETROLEUM COMPANY									
MIDWAY SUNSET-MIDWAY WEST-UPPER	U		6	6	18	532			
CALIFORNIA COMMERCIAL DRILLING COMPANY									
MIDWAY-SUNSET-MIDWAY EAST-SHALLOW	U	1	3	4	15	450			
MIDWAY WEST-UPPER	U	3	11	14	67	2,000			
COMPANY TOTAL		4	14	18	82	2,450			
CALIFORNIA EXPLORATION COMPANY									
EDISON-WEST AREA	U	1	4	5	34	1,035		75	
NEWPORT WEST-MAIN AREA	U		9	9	133	3,979			
COMPANY TOTAL		1	13	14	167	5,014		75	
CALIFORNIA PACIFIC OIL COMPANY									
WILMINGTON-HARBOR-FBV-RANGER	U		1	1	10	315		473	
TOWN LOT-TAR-RANGER-TERMINAL	U		3	3	32	954		1,068	
COMPANY TOTAL			4	4	42	1,269		1,541	
CALIFORNIA SOUTHERN OIL COMPANY									
MIDWAY SUNSET-MIDWAY WEST-UPPER	U		2	2	23	700		105	
LONG BEACH-OLD AREA-UPPER POOLS	U	1		1					
TORRANCE-MAIN	U	1	2	3	13	402		269	
DEL AMO	U	4	4	8	13	395		551	
COMPANY TOTAL		6	8	14	49	1,497		925	
CAL-KERN ASSOCIATES									
KERN RIVER	U	3	4	7	27	825			
CALLAHAN, C. B.									
LONG BEACH-OLD AREA-UPPER POOLS	U		1	1	19	570		277	
CALRAY PETROLEUM CORPORATION									
NEWHALL GROUP-TUNNEL	U		1	1	1	20			
CALSTAR PETROLEUM CO.									
MONTEBELLO-WEST AREA	U		1	1	11	319			
SANTA FE SPRINGS-OTHERS	U		2	2	70	2,111		4,860	
COMPANY TOTAL			3	3	81	2,430		4,860	
CAL-VALLEY OIL COMPANY									
PYRAMID HILLS-OTHERS	U	3	3	6	3	100			
CAMERON, L. H.									
RICHFIELD-EAST AREA	U		1	1	25	754			
CAMERON, MARTHA L., OIL CO.									
OTHER FIELDS-CHINO HILLS	U		7	7	43	1,287			
CAMINOL COMPANY									
PYRAMID HILLS-DAGANY	U		5	5	77	2,306			

COMPANY FIELD, AREA OR POOL	CLASS	NUMBER OF WELLS: SHUT IN	PRODUCING	TOTAL	CRUDE PRODUCTION: BARRELS DAILY	BARRELS	EXCESS OR SHORTAGE BARRELS	GAS PRODUCTION M.C.F	NO. WELLS COMP ABD.
COMPANY TOTAL		1		1					
CAJO OIL COMPANY									
HUNTINGTON BEACH-NORTH AREA-ASHTON	U	1		1					

COMPANY FIELD, AREA OR POOL	CLASS	NUMBER OF WELLS: SHUT IN	PRODUCING	TOTAL	CRUDE PRODUCTION: BARRELS DAILY	BARRELS	EXCESS OR SHORTAGE BARRELS	GAS PRODUCTION M.C.F	NO. WELLS COMP. ABD.
CAMP, CHARLES W.									
COYOTE EAST-ANAHEIM	U		1	1	9	266			
MIOCENE A	U		2	2	10	300			
HUNTINGTON BEACH-NORTH AREA-ASHTON	U	2	4	6	23	700		821	
SOUTH ON-SHORE-TAR	U	1	2	3	17	512			
SOUTH ON-SHORE-MAIN	U		3	3	13	400		247	
SOUTH OFF-SHORE-MAIN	U		1	1	13	397		326	
TORRANCE-DEL AMO	U		1	1	8	241		17	
COMPANY TOTAL		3	14	17	93	2,816		1,411	
CAMPBELL, E. B., COMPANY									
LONG BEACH-OLD AREA-UPPER POOLS	U		2	2	33	1,000		744	
CAMPBELL-SHELL & COLLINS									
FRUITVALE-MARTIN-KERNCO	U		10	10	162	4,873		1,618	
CANYON OIL CORP									
PIRU GROUP-HOPPER CANYON	U		2	2	23	679		40	
CAPITAL COMPANY									
EDISON-WEST AREA	U		4	4	39	1,179		4,279	
SANTA MARIA VALLEY-MAIN	U	1	6	7	81	2,425		3,369	
COMPANY TOTAL		1	10	11	120	3,604		7,648	
CARAVAN OIL COMPANY									
PLACERITA-JUANITA AREA	U		1	1	26	781			
CARLIN OIL COMPANY									
LONG BEACH-OLD AREA-UPPER POOLS	U		1	1	12	358		155	
CARLIN OIL COMPANY NO. 2									
LONG BEACH-OLD AREA-UPPER POOLS	U	1		1					
CARLIN OIL COMPANY NO. 3									
LONG BEACH-OLD AREA-UPPER POOLS	U		1	1	19	565			
CARNEROS OIL COMPANY									
CYMRIC-SALT CREEK WEST AREA-PHACOIDES	U		2	2	65	1,951			
CARREC OIL PROPERTIES									
KERN FRONT	U	1	23	24	260	7,794			
CARROLL, FRANK D., & SCHOFF, MADELINE S.									
SANTA MARIA VALLEY-MAIN	U		4	4	56	1,671		1,200	
CARTAN, HENRY									
HUNTINGTON BEACH-SOUTH ON-SHORE-TAR	U		1	1	5	150		12	
CASS, QUINCY, ASSOCIATES									
GATO RIDGE-TOGNAZZINI	S		2	2	97	2,905			
CATES, MARY B., SPECIAL									
MIDWAY SUNSET-MIDWAY WEST-UPPER	U	1	6	7	14	410		2,000	

COMPANY FIELD, AREA OR POOL	CLASS	NUMBER OF WELLS: SHUT IN	PRODUCING	TOTAL	CRUDE PRODUCTION: BARRELS DAILY	BARRELS	EXCESS OR SHORTAGE BARRELS	GAS PRODUCTION M.C.F	NO. WELLS COMP. ABD.
CATES, MARY B., SPECIAL									
MIDWAY SUNSET-MIDWAY WEST-UPPER	U		1	1	3	90			
COMPANY TOTAL		1	7	8	17	500		2,000	
CAVE, ROBERT									
SANTA MARIA VALLEY-MAIN	U		1	1	5	150		12	
CAVE, ROBERT, & CAVE, ROBERT, JR.									
SANTA MARIA VALLEY-MAIN	U		1	1	5	150		12	
CAVE, ROBERT, JR.									
SANTA MARIA VALLEY-MAIN	U		1	1	5	150		12	
CAVE, ROBERT, JR., & CAVE, ROBERT									
SANTA MARIA VALLEY-MAIN	U		1	1	5	150		12	
CAVE, ROBERT, JR., & CAVE, ROBERT, & CAVE, ROBERT, JR.									
SANTA MARIA VALLEY-MAIN	U		1	1	5	150		12	
CAVE, ROBERT, & CAVE, ROBERT, JR., & CAVE, ROBERT									
SANTA MARIA VALLEY-MAIN	U		1	1	5	150		12	
CAVE, ROBERT, & CAVE, ROBERT, JR., & CAVE, ROBERT, & CAVE, ROBERT, JR.									
SANTA MARIA VALLEY-MAIN	U		1	1	5	150		12	
CAVE, ROBERT, & CAVE, ROBERT, JR., & CAVE, ROBERT, & CAVE, ROBERT, JR., & CAVE, ROBERT									
SANTA MARIA VALLEY-MAIN	U		1	1	5	150		12	
CAVE, ROBERT, & CAVE, ROBERT, JR., & CAVE, ROBERT, & CAVE, ROBERT, JR., & CAVE, ROBERT, & CAVE, ROBERT, JR.									
SANTA MARIA VALLEY-MAIN	U		1	1	5	150		12	
CAVE, ROBERT, & CAVE, ROBERT, JR., & CAVE, ROBERT, & CAVE, ROBERT, JR., & CAVE, ROBERT, & CAVE, ROBERT, JR., & CAVE, ROBERT									
SANTA MARIA VALLEY-MAIN	U		1	1	5	150		12	
CAVE, ROBERT, & CAVE, ROBERT, JR., & CAVE, ROBERT, & CAVE, ROBERT, JR., & CAVE, ROBERT, & CAVE, ROBERT, JR., & CAVE, ROBERT, & CAVE, ROBERT, JR.									
SANTA MARIA VALLEY-MAIN	U		1	1	5	150		12	
CAVE, ROBERT, & CAVE, ROBERT, JR., & CAVE, ROBERT, & CAVE, ROBERT, JR., & CAVE, ROBERT, & CAVE, ROBERT, JR., & CAVE, ROBERT, & CAVE, ROBERT, JR., & CAVE, ROBERT									
SANTA MARIA VALLEY-MAIN	U		1	1	5	150		12	
CAVE, ROBERT, & CAVE, ROBERT, JR., & CAVE, ROBERT, & CAVE, ROBERT, JR., & CAVE, ROBERT, & CAVE, ROBERT, JR., & CAVE, ROBERT, & CAVE, ROBERT, JR., & CAVE, ROBERT, & CAVE, ROBERT, JR.									
SANTA MARIA VALLEY-MAIN	U		1	1	5	150		12	

COMPANY FIELD, AREA OR POOL	CLASS	NUMBER OF WELLS: SHUT IN	NUMBER OF WELLS: PRODUCING	NUMBER OF WELLS: TOTAL	CRUDE PRODUCTION: BARRELS DAILY	CRUDE PRODUCTION: BARRELS	EXCESS OR SHORTAGE BARRELS	GAS PRODUCTION M.C.F	NO. WELLS COMP. ABD.
CATHER-BARNES & COMPANY									
LONG BEACH-OLD AREA-UPPER POOLS	U		1	1	6	195		201	
CATHER-BARNES-CREE									
HUNTINGTON BEACH-HUNTINGTON AVE-JONES	S		2	2	199	5,985		4,721	
CATHER, J. D.									
LONG BEACH-OLD AREA-UPPER POOLS	U		1	1	24	720		586	
CATHER, J. D. & JOHN E.									
LONG BEACH-OLD AREA-UPPER POOLS	U		1	1	5	150		45	
CATHER, JOHN E., & MADDOX, LEE B., MRS.									
SANTA FE SPRINGS-OTHERS	U		1	1	17	503			
CATHER, ROGERS, BARNES & CREE									
HUNTINGTON BEACH-HUNTINGTON AVE-JONES	S		2	2	244	7,330	380*	13,143	
CATHER & SOUTHWICK									
LONG BEACH-OLD AREA-UPPER POOLS	U		1	1	5	144		124	
CAUBU, W. P., AND ASSOCIATES									
FRUITVALE-MARTIN-KERNCO	U	1		1					
C. & D. OIL COMPANY									
WILMINGTON-TOWN LOT-TAR-RANGER-TERMINAL	U		1	1	3	100			
CEDAR FLAT OIL COMPANY									
OTHER FIELDS-CIERVO	U	1	1	2	2	72			
CENTURY OIL COMPANY									
FRUITVALE-MARTIN-KERNCO	U		5	5	60	1,791			
PLACERITA-JUANITA AREA	U		1	1	40	1,198			
LONG BEACH-OLD AREA-UPPER POOLS	U		10	10	100	3,010		1,391	
MONTEBELLO-MAIN AREA-BALDWIN 1-2-3	U		3	3	51	1,526		1,222	
PLAYA DEL REY-VENICE AREA	U		7	7	62	1,849		1,342	
SANTA FE SPRINGS-OTHERS	U		2	2	11	323		2,439	
COMPANY TOTAL			28	28	324	9,697		6,394	
CHANSLOR-WESTERN OIL & DEVELOPMENT CO.									
KERN FRONT	U		62	62	781	23,427		432	
KERN RIVER	U	3	128	131	227	6,819			
MIDWAY-SUNSET-MIDWAY EAST-SHALLOW	U		151	151	786	23,569		8,855	
MIDWAY WEST-UPPER	U	6	276	282	2,126	63,771		7,186	
MIDWAY WEST-QUALITY	U		17	17	270	8,104			
MIDWAY WEST-REPUBLIC	U		13	13	302	9,066		4,580	
MIDWAY WEST-SECTION 6	U	1	6	7	124	3,706		1,561	
MOUNT POSO GROUP-DORSEY-VEDDER	U		14	14	113	3,387			
PALOMA-MAIN AREA-PALOMA-CRUDE OIL	S		3	3	106	3,186	71	22,096	
ROUND MT GROUP-COFFEE CANYON-VEDDER	U	1	6	7	50	1,508		60	

COMPANY FIELD, AREA OR POOL	CLASS	NUMBER OF WELLS: SHUT IN	PRODUCING	TOTAL	CRUDE PRODUCTION: BARRELS DAILY	BARRELS	EXCESS OR SHORTAGE BARRELS	GAS PRODUCTION M.C.F	NO. WELLS: COMP	ABD.
TEJON GRAPEVINE-WESTERN AREA-S	U	1	23	24	547	16,421		1,626		
RINCON-MAIN AREA-HOBSON TOMSON-MILEY	U	1	78	79	2,284	68,524		110,947		
MAIN AREA-C-9	U		12	12	677	20,297		16,436		
OAK GROVE AREA	S	3	21	24	708	21,235	3,550	115,857		
PADRE CANYON AREA-OTHERS	S		11	11	473	14,199		17,038		
PADRE CANYON AREA-A-35	U		2	2	231	6,928		6,641		
BREA OLINDA-OLINDA AREA	U	1	87	88	531	15,917		12,483		
TORRANCE-MAIN	U	1	38	39	309	9,280		7,651	1	
DEL AMO	U		16	16	134	4,028		5,356		
COMPANY TOTAL		18	964	982	10,779	323,372	3,621	338,805	1	
CHASE AND ASSOCIATES										
HUNTINGTON BEACH-SLOUGH-RAMSER EAST	S		1	1	3	100		100	1	
CHASE PRODUCTION COMPANY										
OXNARD-MIOCENE	U		4	4	295	8,850		50		
CHIEFTAN OIL COMPANY										
SANTA PAULA GRP-TIMBER CANYON-MAIN	U		3	3	6	180		15		
C. J. COMPANY										
KERN RIVER	U		18	18	42	1,250				
MCKITTRICK	U		14	14	100	3,014				
MIDWAY SUNSET-MIDWAY WEST-UPPER	U	1	4	5	15	464				
COMPANY TOTAL		1	36	37	157	4,728				
C. K. M. OIL COMPANY										
FRUITVALE-MARTIN-KERNCO	U	1	12	13	315	9,459		15,262		
CLAMPITT, E. A., OIL COMPANY OF OILDALE										
KERN RIVER	U		32	32	174	5,231				
CLAREMONT OIL COMPANY										
COALINGA-WESTSIDE AREA-TEMBLOR	U	1	8	9	35	1,046				
CLARK OIL COMPANY										
LONG BEACH-OLD AREA-UPPER POOLS	U	1	3	4	15	438		657		
CLEARVIEW OIL COMPANY										
HUNTINGTON BEACH-NORTH AREA-ASHTON	U	1	1	2	18	545				
CLIFF PETROLEUM COMPANY										
TEJON GROUP-COMANCHE POINT	U	1		1						
C. M. G. OIL CO.										
HUNTINGTON BEACH-SOUTH ON-SHORE-TAR	U	2		2						
C. M. T. OIL CO.										
HUNTINGTON BEACH-SOUTH ON-SHORE-MAIN	U		1	1	5	137				
COAST EXPLORATION										
FRESNO GROUP-RAISIN CITY-TAR-MIOCENE	U		2	2	191	5,716		572		

COMPANY FIELD, AREA OR POOL	CLASS	NUMBER OF WELLS: SHUT IN	PRODUCING	TOTAL	CRUDE PRODUCTION: BARRELS DAILY	BARRELS	EXCESS OR SHORTAGE BARRELS	GAS PRODUCTION M.C.F	NO. WELLS: COMP	ABD.
COLUMBIA OIL COMPANY										
HUNTINGTON BEACH-SOUTH ON-SHORE-MAIN	U		1	1	3	100				
COMMERCIAL OIL COMPANY										
HUNTINGTON BEACH-SOUTH ON-SHORE-MAIN	U		1	1	3	100				
CONSOLIDATED OIL COMPANY										
HUNTINGTON BEACH-SOUTH ON-SHORE-MAIN	U		1	1	3	100				
CONTINENTAL OIL COMPANY										
HUNTINGTON BEACH-SOUTH ON-SHORE-MAIN	U		1	1	3	100				
CORNELL OIL COMPANY										
HUNTINGTON BEACH-SOUTH ON-SHORE-MAIN	U		1	1	3	100				
CRESTMONT OIL COMPANY										
HUNTINGTON BEACH-SOUTH ON-SHORE-MAIN	U		1	1	3	100				
CRUSADER OIL COMPANY										
HUNTINGTON BEACH-SOUTH ON-SHORE-MAIN	U		1	1	3	100				
CUMMINGS, J. E., OIL COMPANY										
HUNTINGTON BEACH-SOUTH ON-SHORE-MAIN	U		1	1	3	100				
DAVIS, J. E., OIL COMPANY										
HUNTINGTON BEACH-SOUTH ON-SHORE-MAIN	U		1	1	3	100				
DEL AMO OIL COMPANY										
HUNTINGTON BEACH-SOUTH ON-SHORE-MAIN	U		1	1	3	100				
DEL VALLE OIL COMPANY										
HUNTINGTON BEACH-SOUTH ON-SHORE-MAIN	U		1	1	3	100				
DIAMOND OIL COMPANY										
HUNTINGTON BEACH-SOUTH ON-SHORE-MAIN	U		1	1	3	100				
DOMINGUEZ OIL COMPANY										
HUNTINGTON BEACH-SOUTH ON-SHORE-MAIN	U		1	1	3	100				
DOUGLAS OIL COMPANY										
HUNTINGTON BEACH-SOUTH ON-SHORE-MAIN	U		1	1	3	100				
DUNLAP, J. M., OIL COMPANY										
HUNTINGTON BEACH-SOUTH ON-SHORE-MAIN	U		1	1	3	100				
EAGLE OIL COMPANY										
HUNTINGTON BEACH-SOUTH ON-SHORE-MAIN	U		1	1	3	100				
EARLSBORO OIL COMPANY										
HUNTINGTON BEACH-SOUTH ON-SHORE-MAIN	U		1	1	3	100				
EASTERN OIL COMPANY										
HUNTINGTON BEACH-SOUTH ON-SHORE-MAIN	U		1	1	3	100				
EDWARDS OIL COMPANY										
HUNTINGTON BEACH-SOUTH ON-SHORE-MAIN	U		1	1	3	100				
ELLIS OIL COMPANY										
HUNTINGTON BEACH-SOUTH ON-SHORE-MAIN	U		1	1	3	100				
EMPIRE OIL COMPANY										
HUNTINGTON BEACH-SOUTH ON-SHORE-MAIN	U		1	1	3	100				
ENGLISH OIL COMPANY										
HUNTINGTON BEACH-SOUTH ON-SHORE-MAIN	U		1	1	3	100				
EXCELSIOR OIL COMPANY										
HUNTINGTON BEACH-SOUTH ON-SHORE-MAIN	U		1	1	3	100				
FAIRFAX OIL COMPANY										
HUNTINGTON BEACH-SOUTH ON-SHORE-MAIN	U		1	1	3	100				
FARMERS OIL COMPANY										
HUNTINGTON BEACH-SOUTH ON-SHORE-MAIN	U		1	1	3	100				
FIDELITY OIL COMPANY										
HUNTINGTON BEACH-SOUTH ON-SHORE-MAIN	U		1	1	3	100				
FLEMING, J. M., OIL COMPANY										
HUNTINGTON BEACH-SOUTH ON-SHORE-MAIN	U		1	1	3	100				
FOOTHILL OIL COMPANY										
HUNTINGTON BEACH-SOUTH ON-SHORE-MAIN	U		1	1	3	100				
FOREMOST OIL COMPANY										
HUNTINGTON BEACH-SOUTH ON-SHORE-MAIN	U		1	1	3	100				
FRANKLIN OIL COMPANY										
HUNTINGTON BEACH-SOUTH ON-SHORE-MAIN	U		1	1	3	100				
GARFIELD OIL COMPANY										
HUNTINGTON BEACH-SOUTH ON-SHORE-MAIN	U		1	1	3	100				
GENERAL OIL COMPANY										
HUNTINGTON BEACH-SOUTH ON-SHORE-MAIN	U		1	1	3	100				
GLOBE OIL COMPANY										
HUNTINGTON BEACH-SOUTH ON-SHORE-MAIN	U		1	1	3	100				
GOLDEN OIL COMPANY										
HUNTINGTON BEACH-SOUTH ON-SHORE-MAIN	U		1	1	3	100				
GOLDEN WEST OIL COMPANY										
HUNTINGTON BEACH-SOUTH ON-SHORE-MAIN	U		1	1	3	100				
GRAND OIL COMPANY										
HUNTINGTON BEACH-SOUTH ON-SHORE-MAIN	U		1	1	3	100				
GREAT WESTERN OIL COMPANY										
HUNTINGTON BEACH-SOUTH ON-SHORE-MAIN	U		1	1	3	100				
HAMILTON OIL COMPANY										
HUNTINGTON BEACH-SOUTH ON-SHORE-MAIN	U		1	1	3	100				
HARRIS OIL COMPANY										
HUNTINGTON BEACH-SOUTH ON-SHORE-MAIN	U		1	1	3	100				
HAWKINS OIL COMPANY										
HUNTINGTON BEACH-SOUTH ON-SHORE-MAIN	U		1	1	3	100				
HAYWARD OIL COMPANY										
HUNTINGTON BEACH-SOUTH ON-SHORE-MAIN	U		1	1	3	100				
HERMOSA OIL COMPANY										
HUNTINGTON BEACH-SOUTH ON-SHORE-MAIN	U		1	1	3	100				
HILLCREST OIL COMPANY										
HUNTINGTON BEACH-SOUTH ON-SHORE-MAIN	U		1	1	3	100				
HOLLYWOOD OIL COMPANY										
HUNTINGTON BEACH-SOUTH ON-SHORE-MAIN	U		1	1	3	100				
HOME OIL COMPANY										
HUNTINGTON BEACH-SOUTH ON-SHORE-MAIN	U		1	1	3	100				
HUNTINGTON BEACH COMPANY										
HUNTINGTON BEACH-SOUTH ON-SHORE-MAIN	U		1	1	3	100				
HUNTINGTON BEACH OIL COMPANY										
HUNTINGTON BEACH-SOUTH ON-SHORE-MAIN	U		1	1	3	100				
HUNTINGTON OIL COMPANY										
HUNTINGTON BEACH-SOUTH ON-SHORE-MAIN	U		1	1	3	100				
IMPERIAL OIL COMPANY										
HUNTINGTON BEACH-SOUTH ON-SHORE-MAIN	U		1	1	3	100				
INDEPENDENT OIL COMPANY										
HUNTINGTON BEACH-SOUTH ON-SHORE-MAIN	U		1	1	3	100				
INTERNATIONAL OIL COMPANY										
HUNTINGTON BEACH-SOUTH ON-SHORE-MAIN	U		1	1	3	100				
JEFFERSON OIL COMPANY										
HUNTINGTON BEACH-SOUTH ON-SHORE-MAIN	U		1	1	3	100				
KENNEDY OIL COMPANY										
HUNTINGTON BEACH-SOUTH ON-SHORE-MAIN	U		1	1	3	100				
KERN OIL COMPANY										
HUNTINGTON BEACH-SOUTH ON-SHORE-MAIN	U		1	1	3	100				
LAKE OIL COMPANY										
HUNTINGTON BEACH-SOUTH ON-SHORE-MAIN	U		1	1	3	100				
LANCASTER OIL COMPANY										
HUNTINGTON BEACH-SOUTH ON-SHORE-MAIN	U		1	1	3	100				
LEE OIL COMPANY										
HUNTINGTON BEACH-SOUTH ON-SHORE-MAIN	U		1	1	3	100				
LIBERTY OIL COMPANY										
HUNTINGTON BEACH-SOUTH ON-SHORE-MAIN	U		1	1	3	100				
LINCOLN OIL COMPANY										
HUNTINGTON BEACH-SOUTH ON-SHORE-MAIN	U		1	1	3	100				
LOMITA OIL COMPANY										
HUNTINGTON BEACH-SOUTH ON-SHORE-MAIN	U		1	1	3	100				
LONG BEACH OIL COMPANY										
HUNTINGTON BEACH-SOUTH ON-SHORE-MAIN	U		1	1	3	100				
MAGNOLIA OIL COMPANY										
HUNTINGTON BEACH-SOUTH ON-SHORE-MAIN	U		1	1	3	100				
MARATHON OIL COMPANY										
HUNTINGTON BEACH-SOUTH ON-SHORE-MAIN	U		1	1	3	100				
MARKET OIL COMPANY										
HUNTINGTON BEACH-SOUTH ON-SHORE-MAIN	U		1	1	3	100				
MARLAND OIL COMPANY										
HUNTINGTON BEACH-SOUTH ON-SHORE-MAIN	U		1	1	3	100				
MARSHALL OIL COMPANY										
HUNTINGTON BEACH-SOUTH ON-SHORE-MAIN	U		1	1	3	100				
MAYFAIR OIL COMPANY										
HUNTINGTON BEACH-SOUTH ON-SHORE-MAIN	U		1	1	3	100				
MCKINLEY OIL COMPANY										
HUNTINGTON BEACH-SOUTH ON-SHORE-MAIN	U		1	1	3	100				
MERCURY OIL COMPANY										
HUNTINGTON BEACH-SOUTH ON-SHORE-MAIN	U		1	1	3	100				
MIDWAY OIL COMPANY										
HUNTINGTON BEACH-SOUTH ON-SHORE-MAIN	U		1	1	3	100				
MONTEBELLO OIL COMPANY										
HUNTINGTON BEACH-SOUTH ON-SHORE-MAIN	U		1	1	3	100				
MONTEREY OIL COMPANY										
HUNTINGTON BEACH-SOUTH ON-SHORE-MAIN	U		1	1	3	100				
MOUNTAIN OIL COMPANY										
HUNTINGTON BEACH-SOUTH ON-SHORE-MAIN	U		1	1	3	100				
NATIONAL OIL COMPANY										
HUNTINGTON BEACH-SOUTH ON-SHORE-MAIN	U		1	1	3	100				
NEVADA OIL COMPANY										
HUNTINGTON BEACH-SOUTH ON-SHORE-MAIN	U		1	1	3	100				
NEW YORK OIL COMPANY										
HUNTINGTON BEACH-SOUTH ON-SHORE-MAIN	U		1	1	3	100				
NORTH AMERICAN OIL COMPANY										
HUNTINGTON BEACH-SOUTH ON-SHORE-MAIN	U		1	1	3	100				
OCCIDENTAL OIL COMPANY										
HUNTINGTON BEACH-SOUTH ON-SHORE-MAIN	U		1	1	3	100				
OHIO OIL COMPANY										
HUNTINGTON BEACH-SOUTH ON-SHORE-MAIN	U		1	1	3	100				
PACIFIC OIL COMPANY										
HUNTINGTON BEACH-SOUTH ON-SHORE-MAIN	U		1	1	3	100				
PACIFIC WESTERN OIL COMPANY										
HUNTINGTON BEACH-SOUTH ON-SHORE-MAIN	U		1	1	3	100				
PARAMOUNT OIL COMPANY										
HUNTINGTON BEACH-SOUTH ON-SHORE-MAIN	U		1	1	3	100				
PARKER OIL COMPANY										
HUNTINGTON BEACH-SOUTH ON-SHORE-MAIN	U		1	1	3	100				
PEERLESS OIL COMPANY										
HUNTINGTON BEACH-SOUTH ON-SHORE-MAIN	U		1	1	3	100				
PENNSYLVANIA OIL COMPANY										
HUNTINGTON BEACH-SOUTH ON-SHORE-MAIN	U		1	1	3	100				
PETROLEUM OIL COMPANY										
HUNTINGTON BEACH-SOUTH ON-SHORE-MAIN	U		1	1	3	100				
PHILLIPS OIL COMPANY										
HUNTINGTON BEACH-SOUTH ON-SHORE-MAIN	U		1	1	3	100				
PIONEER OIL COMPANY										
HUNTINGTON BEACH-SOUTH ON-SHORE-MAIN	U		1	1	3	100				
PLYMOUTH OIL COMPANY										
HUNTINGTON BEACH-SOUTH ON-SHORE-MAIN	U		1	1	3	100				
POWELL OIL COMPANY										
HUNTINGTON BEACH-SOUTH ON-SHORE-MAIN	U		1	1	3	100				
PRAIRIE OIL COMPANY										
HUNTINGTON BEACH-SOUTH ON-SHORE-MAIN	U		1	1	3	100				
PRODUCERS OIL COMPANY										
HUNTINGTON BEACH-SOUTH ON-SHORE-MAIN	U		1	1	3	100				
RANCHO OIL COMPANY										
HUNTINGTON BEACH-SOUTH ON-SHORE-MAIN	U		1	1	3	100				
RICHFIELD OIL COMPANY										
HUNTINGTON BEACH-SOUTH ON-SHORE-MAIN	U		1	1	3	100				
ROSECRANS OIL COMPANY										
HUNTINGTON BEACH-SOUTH ON-SHORE-MAIN	U		1	1	3	100				
ROYAL OIL COMPANY										
HUNTINGTON BEACH-SOUTH ON-SHORE-MAIN	U		1	1	3	100				
SAN GABRIEL OIL COMPANY										
HUNTINGTON BEACH-SOUTH ON-SHORE-MAIN	U		1	1	3	100				
SANTA FE OIL COMPANY										
HUNTINGTON BEACH-SOUTH ON-SHORE-MAIN	U		1	1	3	100				
SHELL OIL COMPANY										
HUNTINGTON BEACH-SOUTH ON-SHORE-MAIN	U		1	1	3	100				
SIGNAL OIL COMPANY										
HUNTINGTON BEACH-SOUTH ON-SHORE-MAIN	U		1	1	3	100				
SOUTHERN OIL COMPANY										
HUNTINGTON BEACH-SOUTH ON-SHORE-MAIN	U		1	1	3	100				
STANDARD OIL COMPANY										
HUNTINGTON BEACH-SOUTH ON-SHORE-MAIN	U		1	1	3	100				
SUNSET OIL COMPANY										
HUNTINGTON BEACH-SOUTH ON-SHORE-MAIN	U		1	1	3	100				
TEXAS OIL COMPANY										
HUNTINGTON BEACH-SOUTH ON-SHORE-MAIN	U		1	1	3	100				
TIDEWATER OIL COMPANY										
HUNTINGTON BEACH-SOUTH ON-SHORE-MAIN	U		1	1	3	100				
UNION OIL COMPANY										
HUNTINGTON BEACH-SOUTH ON-SHORE-MAIN	U		1	1	3	100				
UNITED OIL COMPANY										
HUNTINGTON BEACH-SOUTH ON-SHORE-MAIN	U		1	1	3	100				
VALLEY OIL COMPANY										
HUNTINGTON BEACH-SOUTH ON-SHORE-MAIN	U		1	1	3	100				
WESTERN OIL COMPANY										
HUNTINGTON BEACH-SOUTH ON-SHORE-MAIN	U		1	1	3	100				
WILSHIRE OIL COMPANY										
HUNTINGTON BEACH-SOUTH ON-SHORE-MAIN	U		1	1	3	100				
WINDSOR OIL COMPANY										
HUNTINGTON BEACH-SOUTH ON-SHORE-MAIN	U		1	1	3	100				
WOODLEY OIL COMPANY										
HUNTINGTON BEACH-SOUTH ON-SHORE-MAIN	U		1	1	3	100				

COMPANY FIELD, AREA OR POOL	CLASS	NUMBER OF WELLS: SHUT IN	PRODUCING	TOTAL	CRUDE PRODUCTION: BARRELS DAILY	BARRELS	EXCESS OR SHORTAGE BARRELS	GAS PRODUCTION M.C.F	NO. WELLS COMP ABD
RAISIN CITY-MIOCENE	U	1	5	6	281	8,419		842	
RAISIN CITY-EOCENE	U		1	1	12	360		36	
MIDWAY-SUNSET-MIDWAY EAST-SHALLOW	U	1		1					
MIDWAY EAST-GIBSON	U	1	8	9	70	2,100			
MIDWAY EAST-MARICOPA FLAT	U		4	4	45	1,358			
COMPANY TOTAL		3	20	23	599	17,953		1,450	
COAST EXPLORATION AND GIBSON DRILLING									
FRESNO GROUP-HELM-LANARE AREA-MIOCENE	U		2	2	171	5,132		5,650	
HELM-LANARE AREA-EOCENE	U		1	1	138	4,140		3,817	
MIDWAY SUNSET-MIDWAY EAST-MARICOPA FLAT	U	1	4	5	58	1,750		1,199	
COMPANY TOTAL		1	7	8	367	11,022		10,666	
COAST-GIBSON OIL OPERATIONS									
FRESNO GROUP-RIVERDALE-MIOCENE	S	1	4	5	300	8,986		6,361	
COAST-PARKER, INC.									
TORRANCE-DEL AMO	U		1	1	2	50			
COAST SUPPLY COMPANY, LTD.									
COALINGA-WESTSIDE AREA-TEMBLOR	U	1	3	4	4	110			
HUNTINGTON BEACH-NORTH AREA-TAR BOLSA	U		1	1	14	415			
NORTH AREA-ASHTON	U		2	2	10	297			
SOUTH ON-SHORE-TAR	U		5	5	26	793			
SOUTH ON-SHORE-MAIN	U		2	2	6	187			
LONG BEACH-OLD AREA-UPPER POOLS	U	2	16	18	153	4,586		1,812	
NEWPORT WEST-ALDRICH AREA-C	U		3	3	20	603			
RICHFIELD-EAST AREA	U		2	2	9	277		60	
OTHER FIELDS-TALBERT	U		1	1	4	110			
COMPANY TOTAL		3	35	38	246	7,378		1,872	
COAST VIEW OIL COMPANY									
LONG BEACH-OLD AREA-UPPER POOLS	U		1	1	5	147		30	
COASTAL OIL COMPANY									
LONG BEACH-OLD AREA-UPPER POOLS	U		1	1	18	540		247	
COASTAL STATES OIL COMPANY									
LONG BEACH-OLD AREA-UPPER POOLS	U		1	1	15	440		14	
COCKRIEL & SPELTS PETROLEUM									
LONG BEACH-OLD AREA-UPPER POOLS	U	1	14	15	117	3,513		3,045	
OLD AREA-DE SOTO SOUTH FLANK	U		1	1	7	201		129	
COMPANY TOTAL		1	15	16	124	3,714		3,174	
COLE & BROOKS									
LONG BEACH-OLD AREA-UPPER POOLS	U		1	1	13	377		120	
COLE, FRED E.									
SANTA MARIA VALLEY-MAIN	U		5	5	58	1,734		2,889	

COMPANY FIELD, AREA OR POOL	CLASS	NUMBER OF WELLS: SHUT IN	PRODUCING	TOTAL	CRUDE PRODUCTION: BARRELS DAILY	BARRELS	EXCESS OR SHORTAGE BARRELS	GAS PRODUCTION M.C.F	NO. WELLS COMP ABD
COLE, W. J.									
HUNTINGTON BEACH-NORTH AREA-ASHTON	U		1	1	6	179		31	
COLGROVE, C. W.									
EDNA-OAK PARK AREA	U	3	4	7	30	896			
COLORADO OIL COMPANY									
WHITTIER-CENTRAL AREA-MAIN	U	1	15	16	27	805		500	
COLVIN, CHARLES H., & BRALY, C. E.									
LONG BEACH-OLD AREA-UPPER POOLS	U		1	1	8	231		222	
COMANCHE OIL COMPANY									
TEJON HILLS-S	U		4	4	13	402			
COMMANDER OIL COMPANY, LTD.									
PIRU GROUP-HOPPER CANYON	U	2	12	14	129	3,875		5,700	
CONCORD OIL COMPANY									
HUNTINGTON BEACH-NORTH AREA-ASHTON	U	1	1	2	5	138			
CONFIDENCE OIL COMPANY, THE									
COALINGA-WESTSIDE AREA-TEMBLOR	U		12	12	26	780			
CONRAY OIL COMPANY									
SHIELLS CANYON-SESPE	U		1	1	5	154		10	
CONTINENTAL OIL COMPANY									
NEWHALL GROUP-TOWNSITE	U		1	1	3	80			
RINCON-OAK GROVE AREA	S		19	19	912	27,354	3,610	94,176	
PADRE CANYON AREA-OTHERS	S		4	4	114	3,425		3,850	
SAN MIGUELITO-FIRST GRUBB	S		1-						
	S	6	46	51	1,885	56,554	15,454	273,196	
SECOND GRUBB	S		1-						
	S	3	36	38	2,055	61,640	20,240	357,954	
THIRD GRUBB	U		25	25	1,262	37,874		106,311	
VENTURA-D-5,6 NORTH	S		14	14	1,999	59,968	5,427	118,066	
D-7 D-8	S	2	6	8	1,209	36,275		36,268	
RICHFIELD-EAST AREA	U	1	19	20	140	4,200		3,595	
SEAL BEACH-ALAMITOS AREA	U		9	9	101	3,020		2,195	
NORTH BLOCK-SAN GABRIEL	U		1	1	36	1,095		1,176	
NORTH BLOCK-MCGRATH	S	1	12	13	713	21,382	2,222	32,171	
SOUTH BLOCK-BIXBY SELOVER	U	4	8	12	141	4,216		6,928	
SOUTH BLOCK-WASEM	U		1-						
	U		33	32	1,209	36,270		36,827	
SOUTH BLOCK-MCGRATH	U		5	5	168	5,029		3,575	
SOUTH BLOCK-LANE	U		4	4	222	6,671		5,931	
OTHER FIELDS-TURNBULL	U	1	4	5	45	1,353		1,155	
COMPANY TOTAL		18	243	261	12,214	366,406	46,953	1083,374	

COMPANY FIELD, AREA OR POOL	CLASS	NUMBER OF WELLS: SHUT IN	PRODUCING	TOTAL	CRUDE PRODUCTION: BARRELS DAILY	BARRELS	EXCESS OR SHORTAGE BARRELS	GAS PRODUCTION M.C.F	NO. WELLS COMP ABD
CONTINENTAL OIL COMPANY									
SEAL BEACH-ALAMITOS AREA	U		1	1	3	90		90	
SOUTH BLOCK-MCGRATH	U		1	1	3	90		90	
SOUTH BLOCK-LANE	U		1	1	3	90		90	
COMPANY TOTAL			3	3	9	270		270	
CONTINENTAL-EMSCO COMPANY									
SEAL BEACH-ALAMITOS AREA	U		1	1	3	90		90	
SOUTH BLOCK-MCGRATH	U		1	1	3	90		90	
SOUTH BLOCK-LANE	U		1	1	3	90		90	
COMPANY TOTAL			3	3	9	270		270	
CONTINENTAL SUPPLY COMPANY									
SEAL BEACH-ALAMITOS AREA	U		1	1	3	90		90	
SOUTH BLOCK-MCGRATH	U		1	1	3	90		90	
SOUTH BLOCK-LANE	U		1	1	3	90		90	
COMPANY TOTAL			3	3	9	270		270	
CONTRACTORS OIL COMPANY									
SEAL BEACH-ALAMITOS AREA	U		1	1	3	90		90	
SOUTH BLOCK-MCGRATH	U		1	1	3	90		90	
SOUTH BLOCK-LANE	U		1	1	3	90		90	
COMPANY TOTAL			3	3	9	270		270	
CONTRACTORS OIL COMPANY OF CALIFORNIA									
SEAL BEACH-ALAMITOS AREA	U		1	1	3	90		90	
SOUTH BLOCK-MCGRATH	U		1	1	3	90		90	
SOUTH BLOCK-LANE	U		1	1	3	90		90	
COMPANY TOTAL			3	3	9	270		270	
COOK, A. J.									
HUNTINGTON BEACH-NORTH AREA-ASHTON	U		1	1	6	179		31	
COOPER, J. C.									
HUNTINGTON BEACH-NORTH AREA-ASHTON	U		1	1	6	179		31	
COOPER, J. C., & SMITH, J. A.									
HUNTINGTON BEACH-NORTH AREA-ASHTON	U		1	1	6	179		31	
COOPER, J. C., & SMITH, J. A., & SMITH, J. A.									
HUNTINGTON BEACH-NORTH AREA-ASHTON	U		1	1	6	179		31	
COOPER, J. C., & SMITH, J. A., & SMITH, J. A., & SMITH, J. A.									
HUNTINGTON BEACH-NORTH AREA-ASHTON	U		1	1	6	179		31	
COOPER, J. C., & SMITH, J. A., & SMITH, J. A., & SMITH, J. A., & SMITH, J. A.									
HUNTINGTON BEACH-NORTH AREA-ASHTON	U		1	1	6	179		31	
COOPER, J. C., & SMITH, J. A., & SMITH, J. A., & SMITH, J. A., & SMITH, J. A., & SMITH, J. A.									
HUNTINGTON BEACH-NORTH AREA-ASHTON	U		1	1	6	179		31	
COOPER, J. C., & SMITH, J. A., & SMITH, J. A., & SMITH, J. A., & SMITH, J. A., & SMITH, J. A., & SMITH, J. A.									
HUNTINGTON BEACH-NORTH AREA-ASHTON	U		1	1	6	179		31	
COOPER, J. C., & SMITH, J. A., & SMITH, J. A., & SMITH, J. A., & SMITH, J. A., & SMITH, J. A., & SMITH, J. A., & SMITH, J. A.									
HUNTINGTON BEACH-NORTH AREA-ASHTON	U		1	1	6	179		31	

COMPANY FIELD, AREA OR POOL	CLASS	NUMBER OF WELLS: SHUT IN	PRODUCING	TOTAL	CRUDE PRODUCTION: BARRELS DAILY	BARRELS	EXCESS OR SHORTAGE BARRELS	GAS PRODUCTION M.C.F	NO. WELLS COMP	NO. WELLS ABD.
COONEN-MILLER OIL COMPANY										
SEAL BEACH-ALAMITOS AREA	U		1	1	6	174		205		
COOPER AND BRAIN										
HUNTINGTON BEACH-HUNTINGTON AVE-JONES	S		3	3	291	8,744	391*	7,500		
WILMINGTON-TOWN LOT-TAR-RANGER-TERMINAL	U		14	14	224	6,735		3,600		
COMPANY TOTAL			17	17	515	15,479	391*	11,100		
COPA OIL COMPANY										
MIDWAY SUNSET-MIDWAY EAST-GIBSON	U		4	4	44	1,329				
MIDWAY EAST-MARICOPA FLAT	U		3	3	13	401				
COMPANY TOTAL			7	7	57	1,730				
COPE, CARL L.										
FRUITVALE-MARTIN-KERNCO	U		2	2	29	865		725		
COPLIN, D. D.										
HUNTINGTON BEACH-NORTH AREA-ASHTON	U		1	1	8	250		370		
COPLIN & ASSOCIATES										
HUNTINGTON BEACH-SOUTH ON-SHORE-MAIN	U	1		1						
CORDES, WALTER J., OIL CO.										
KERN RIVER	U	1	22	23	34	1,010				
CORNETT, W. V.										
TORRANCE-MAIN	U		1	1	6	180				
CORWIN, E. L., OPERATOR										
MIDWAY SUNSET-MIDWAY EAST-SHALLOW	U		1	1	4	134				
COX, WILBUR J.										
SANTA FE SPRINGS-OTHERS	U	2	7	9	139	4,161		7,128		
COZI OIL COMPANY										
HUNTINGTON BEACH-SOUTH ON-SHORE-TAR	U	5	1	6	7	221				
SOUTH ON-SHORE-MAIN	U		1	1	2	72				
COMPANY TOTAL		5	2	7	9	293				
C. & R. OIL COMPANY										
EDISON-WEST AREA	U	1	1	2	1	28				
MOUNTAIN VIEW-MAIN AREA-OTHERS	U	2		2						
ROSECRANS-ATHENS AREA-UPPER	U		2	2	7	204		175		
ATHENS AREA-LOWER	U		1	1	3	85		60		
COMPANY TOTAL		3	4	7	11	317		235		
CRABTREE, O. H.										
LONG BEACH-OLD AREA-UPPER POOLS	U		1	1	6	191		33		
CRABTREE, O. H., & GOODRICH, GEO. E.										
LONG BEACH-OLD AREA-UPPER POOLS	U		1	1	10	292		230		
CRABTREE, O. H., & ZINGG, R. F.										
TORRANCE-DEL AMO	U		1	1	8	231		29		

COMPANY FIELD, AREA OR POOL	CLASS	NUMBER OF WELLS: SHUT IN	PRODUCING	TOTAL	CRUDE PRODUCTION: BARRELS DAILY	BARRELS	EXCESS OR SHORTAGE BARRELS	GAS PRODUCTION M.C.F	NO. WELLS COMP ABD.
CRAIGO, E. J.									
WILMINGTON-TOWN LOT-TAR-RANGER-TERMINAL	U		2	2	43	1,305			
CRAWFORD, JACK B.									
HUNTINGTON BEACH-HUNTINGTON AVE-MAIN	S		1	1	4	128			
CRAWFORD, B., ET AL									
HUNTINGTON BEACH-HUNTINGTON AVE-JONES	S		11	11	1,087	32,608	2,296*	57,391	3
SLOUGH-RAMSER EAST	S		4	4	664	19,907	2,272	154,144	1
COMPANY TOTAL			15	15	1,751	52,515	24*	211,535	4
CREASEY, FRANK C.									
KERN RIVER	U		5	5	17	520			
CREE OIL COMPANY									
LONG BEACH-OLD AREA-UPPER POOLS	U	3	8	11	190	5,702		3,170	
CRESCENT PETROLEUM COMPANY									
MIDWAY SUNSET-MIDWAY WEST-UPPER	U	3	32	35	185	5,558		750	
CRESTMONT OIL COMPANY									
KERN RIVER	U		29	29	128	3,831			
MOUNT POSO GROUP-DOMINION-VEDDER	U		25	25	70	2,088			
ROUND MOUNTAIN GROUP-PYRAMID-VEDDER	U		34	34	212	6,369			
SHARKTOOTH-VEDDER	U		4	4	47	1,415			
PIRU GROUP-HOLSER CANYON	U		3	3	31	916			
PLACERITA-OLD AREA	U	3	24	27	331	9,931			
RAMONA-KERN DEL VALLE	S		11	11	122	3,662		16,936	
COMPANY TOTAL		3	130	133	941	28,212		16,936	
CREVOLIN, ANDREW J., OIL COMPANY									
HUNTINGTON BEACH-SOUTH ON-SHORE-MAIN	U		1	1	8	251			
WILMINGTON-TOWN LOT-TAR-RANGER-TERMINAL	U		1	1	12	368			
COMPANY TOTAL			2	2	20	619			
CRISSMAN, W. M., & BRALY, C. E.									
TORRANCE-MAIN	U		1	1	17	507		510	
CROWN & CREE OIL COMPANY									
LONG BEACH-OLD AREA-UPPER POOLS	U		1	1	12	361		284	
CROWN OIL COMPANY									
CAT CANYON WEST-LOS FLORES	S	1		1					
SANTA MARIA VALLEY-MAIN	U	1	2	3	7	220		6,742	
COMPANY TOTAL		2	2	4	7	220		6,742	
CRUISEND OIL COMPANY									
MOUNTAIN VIEW-MAIN AREA-OTHERS	U		1	1	10	300		211	
TORRANCE-MAIN	U		1	1	10	300			
COMPANY TOTAL			2	2	20	600		211	
CUNNINGHAM, C. D.									
HUNTINGTON BEACH-HUNTINGTON AVE-JONES	S		7	7	324	9,734	2,966*	24,335	2

COMPANY FIELD, AREA OR POOL	CLASS	NUMBER OF WELLS: SHUT IN	PRODUCING	TOTAL	CRUDE PRODUCTION: BARRELS DAILY	BARRELS	EXCESS OR SHORTAGE BARRELS	GAS PRODUCTION M.C.F	NO. WELLS COMP ABD.
CUNNINGHAM, C. D.									
HUNTINGTON BEACH-HUNTINGTON AVE-JONES	S		7	7	324	9,734	2,966*	24,335	2

COMPANY FIELD, AREA OR POOL	CLASS	NUMBER OF WELLS: SHUT IN	PRODUCING	TOTAL	CRUDE PRODUCTION: BARRELS DAILY	BARRELS	EXCESS OR SHORTAGE BARRELS	GAS PRODUCTION M.C.F	NO. WELLS COMP ABD.
HUNTINGTON AVE-MAIN	S		1	1	28	852		2,024	
COMPANY TOTAL			8	8	352	10,586	2,966*	26,359	2
CURSON, N. W., ASSOCIATES									
PLACERITA-OLD AREA	U	1	4	5	17	514		30	
CURTIS, E. G.									
PLAYA DEL REY-VENICE AREA	U		3	3	24	715		758	
DAVIDSON OIL COMPANY									
PLAYA DEL REY-VENICE AREA	U		1	1	13	401		3,610	
DAVIS, DAVIS, & DAVIS									
HUNTINGTON BEACH-SOUTH ON-SHORE-MAIN	U		1	1	8	255		136	
DAVIS, H. T.									
TORRANCE-MAIN	U		2	2	6	190		101	
DAVIS INVESTMENT COMPANY									
LONG BEACH-OLD AREA-UPPER POOLS	U		19	19	362	10,846		11,799	
DAVIS, JOHN B., DR.									
LONG BEACH-OLD AREA-UPPER POOLS	U	1		1					
DAVIS, LEE S.									
TORRANCE-DEL AMO	U		1	1	13	404		465	
WILMINGTON-TOWN LOT-TAR-RANGER-TERMINAL	U		3	3	51	1,545		575	
COMPANY TOTAL			4	4	64	1,949		1,040	
DAVIS, LOREN A., OPERATOR									
HUNTINGTON BEACH-HUNTINGTON AVE-JONES	S		2	2	35	1,059	565*	2,336	2
DAWOOD COMPANY									
RICHFIELD-EAST AREA	U		1	1	2	65			
DAWSON OIL COMPANY									
LONG BEACH-OLD AREA-UPPER POOLS	U		1	1	13	397		114	
DAY, K. H.									
TORRANCE-MAIN	U	1	4	5	18	555		138	
DEL AMO	U	1	2	3	9	270		314	
COMPANY TOTAL		2	6	8	27	825		452	
D. B. M. OIL COMPANY									
LONG BEACH-OLD AREA-UPPER POOLS	U	1	22	23	259	7,779		8,921	
ROSECRANS-SOUTH AREA-O DEA	U		1	1	9	258		300	
COMPANY TOTAL		1	23	24	268	8,037		9,221	
D. & D. OIL COMPANY, A CORPORATION									
KERN RIVER	U		39	39	217	6,501			
DEL-AMO ESTATE COMPANY									
TORRANCE-MAIN	U	1	48	49	404	12,124		8,567	
DEL-AMO OIL COMPANY									
TORRANCE-MAIN	U		1	1	7	201			

COMPANY FIELD, AREA OR POOL	CLASS	NUMBER OF WELLS: SHUT IN	PRODUCING	TOTAL	CRUDE PRODUCTION: BARRELS DAILY	BARRELS	EXCESS OR SHORTAGE BARRELS	GAS PRODUCTION M.C.F	NO. WELLS COMP ABD.
DELANEY A. J.									
TORRANCE-MAIN	U		11	11	29	869			
DELANEY, FRED G.									
LONG BEACH-OLD AREA-UPPER POOLS	U		1	1	13	393		346	
DELANEY PETROLEUM CORPORATION									
LONG BEACH-OLD AREA-UPPER POOLS	U		6	6	51	1,538		945	
TORRANCE-MAIN	U		3	3	12	370		435	
COMPANY TOTAL			9	9	63	1,908		1,380	
DELANEY PETROLEUM CORPORATION & CATHER, CHARLES E.									
LONG BEACH-OLD AREA-UPPER POOLS	U		3	3	23	695		296	
DELANTY, B. F.									
TEMBLOR RANCH	U	11	12	23	13	390			
DEL MAR OIL COMPANY									
HUNTINGTON BEACH-SOUTH ON-SHORE-TAR	U	5	1	6	8	249			
DEL RE, PETER, OIL COMPANY									
TORRANCE-MAIN	U	1	5	6	41	1,225			
DEL REY OIL COMPANY									
KERN RIVER	U		25	25	141	4,244			
DELROCO OIL COMPANY									
HUNTINGTON BEACH-HUNTINGTON AVE-JONES	S		1	1	13	400	110	400	1
DES MOINES OIL COMPANY									
EDISON-WEST AREA	U		13	13	136	4,095		1,640	
DE SOTO OIL COMPANY									
LONG BEACH-OLD AREA-DE SOTO SOUTH FLANK	U		1	1	27	801		933	
DETTERICH & FISKE									
WHITTIER-CENTRAL AREA-MAIN	U	2	3	5	2	50			
DICK & DORE OIL COMPANY									
KERN RIVER	U		32	32	32	960			
DICKEY, H. C.									
KERN RIVER	U	18		18					
DICKINSON, RAY									
TEJON HILLS-S	U	1	1	2	2	47			
DI GIORGIO FRUIT CORPORATION									
MOUNTAIN VIEW-DIGIORGIO AREA	U		1	1	2	49		6	
DIRECTORS OIL COMPANY									
MIDWAY-SUNSET-MIDWAY WEST-UPPER	U		11	11	84	2,527			
DISTRICT OIL CORPORATION									
MONTEBELLO-WEST AREA	U		1	1	5	155		58	

COMPANY FIELD, AREA OR POOL	CLASS	NUMBER OF WELLS SHUT IN	PRODUCING	TOTAL	CRUDE PRODUCTION BARRELS DAILY	BARRELS	EXCESS OR SHORTAGE BARRELS	GAS PRODUCTION M.C.F	NO. WELLS COMP. ABD.
MONTEBELLO-WEST AREA	U		1	1	5	155		58	

COMPANY FIELD, AREA OR POOL	CLASS	NUMBER OF WELLS SHUT IN	PRODUCING	TOTAL	CRUDE PRODUCTION BARRELS DAILY	BARRELS	EXCESS OR SHORTAGE BARRELS	GAS PRODUCTION M.C.F	NO. WELLS COMP. ABD.
D. J. V. SYNDICATE									
NEWPORT WEST-MAIN AREA	U	4		4					
D. K. PARTNERSHIP									
TEJON HILLS-S	U		6	6	31	938		582	
V	U	3	9	12	171	5,133		3,188	
T	U		2	2	34	1,018		631	
COMPANY TOTAL		3	17	20	236	7,089		4,401	
D. K. PARTNERSHIP #2									
TEJON HILLS-T	U		16	16	275	8,246		4,459	
D. K. PARTNERSHIP #3									
TEJON HILLS-S	U		1	1	6	194			
V	U		3	3	86	2,591			
T	U		1	1	28	851			
COMPANY TOTAL			5	5	120	3,636			
DOC OIL COMPANY									
PLACERITA-JUANITA AREA	U		3	3	13	390			
DOC RICH OIL COMPANY									
RICHFIELD-EAST AREA	U	1	1	2	14	420		503	
DODGE, L. H.									
HUNTINGTON BEACH-SOUTH ON-SHORE-MAIN	U		1	1	3	90			
DOE, ROBERT B.									
KERN FRONT	U		2	2	3	100			
DOHENY, E. L., OPERATOR									
EDISON-WEST AREA	U		3	3	37	1,114			
DOHENY, PATRICK A.									
MOUNTAIN VIEW-MAIN AREA-OTHERS	U		1	1	10	307			
DOHERTY, R. E.									
TORRANCE-MAIN	U		1	1	8	235			
DOLLEY, CHESTER F.									
LONG BEACH-OLD AREA-DE SOTO SOUTH FLANK	U		1	1	16	483		710	
NEWPORT WEST-SURF AREA-EAST BLOCK	U		1	1	45	1,354			
COMPANY TOTAL			2	2	61	1,837		710	
DOLLEY, ERNEST L.									
TORRANCE-MAIN	U		1	1	10	293		366	
DOLLEY & LONG									
WILMINGTON-HARBOR-FB-IV-RANGER	U		1	1	15	436		560	
TOWN LOT-TAR-RANGER-TERMINAL	U		4	4	36	1,091			
COMPANY TOTAL			5	5	51	1,527		560	
DOLLEY, MORTON, & DOLLEY									
MOUNTAIN VIEW-MAIN AREA-OTHERS	U	8	9	17	187	5,616		1,500	

COMPANY FIELD, AREA OR POOL	CLASS	NUMBER OF WELLS: SHUT IN	PRODUCING	TOTAL	CRUDE PRODUCTION: BARRELS DAILY	BARRELS	EXCESS OR SHORTAGE BARRELS	GAS PRODUCTION M.C.F	NO. WELLS: COMP	ABD.
DONOVAN, GEORGE, & JENKINS, RALPH										
OJAI GROUP-SISAR-SILVERTHREAD	U		1	1	5	147				
DORMAX OIL COMPANY										
LONG BEACH-OLD AREA-DE SOTO SOUTH FLANK	U		1	1	67	2,016		3,182		
DOUGAN, L. C.										
FRUITVALE-MARTIN-KERNCO	U		1	1	3	105				
MOUNTAIN VIEW-MAIN AREA-OTHERS	U		1	1	5	164				
POSO CREEK GROUP-PREMIER MAIN AREA	U	2	3	5	30	888				
LONG BEACH-OLD AREA-UPPER POOLS	U		1	1	12	375		150		
WILMINGTON-TOWN LOT-TAR-RANGER-TERMINAL	U		1	1	4	130				
COMPANY TOTAL		2	7	9	54	1,662		150		
DOUGAN OIL COMPANY										
POSO CREEK GROUP-PREMIER MAIN AREA	U		2	2	38	1,126				
DOUGLAS, H. S.										
KERN RIVER	U		5	5	20	607				
DOUGLAS, J. W.										
KERN RIVER	U		2	2	13	380			1	
DOUGLAS OIL COMPANY OF CALIFORNIA										
CASTAIC HILLS-STERLING	S	2	1	3	26	789		2,255		
CAT CANYON WEST-ALEXANDER	U	1		1						
LOS FLORES	S		15	15	475	14,249	125*	4,410		
OLIVERA CANYON	U		12	12	705	21,149				
SANTA MARIA VALLEY-MAIN	U	6	2	8	22	668				
HOUK	S		2	2	201	6,024				1
WILMINGTON-TOWN LOT-TAR-RANGER-TERMINAL	U		6	6	63	1,897		1,183		
COMPANY TOTAL		9	38	47	1,492	44,776	125*	7,848	1	
DOZEN OIL COMPANY, THE										
ROSECRANS-ATHENS AREA-O DEA	U		1	1	9	268		1,134		
DRILLING & EXPLORATION COMPANY, LTD.										
RICHFIELD-EAST AREA	U		11	11	699	20,967		21,113		
DRILLING & PRODUCTION CO.										
MOUNT POSO GROUP-MOUNT POSO-VEDDER	U	1		1						
TEJON GRAPEVINE-CENTRAL AREA-RESERVE	U	2	5	7	134	4,006		893		
CENTRAL AREA-V	U	1		1						
CENTRAL AREA-J.V.	S		1	1	349	10,474	724	10,454		
WESTERN AREA-S	U	1	22	23	442	13,257		10,081		
WESTERN AREA-RESERVE	U		2	2	26	768		708	1	
COMPANY TOTAL		5	30	35	951	28,505	724	22,136	1	
DRINKHOUSE, H. M., DOUGLAS, H. S., & HAMMERSLOUGH, A. M.										
KERN FRONT	U	3		3						

COMPANY FIELD, AREA OR POOL	CLASS	NUMBER OF WELLS: SHUT IN	PRODUCING	TOTAL	CRUDE PRODUCTION: BARRELS DAILY	BARRELS	EXCESS OR SHORTAGE BARRELS	GAS PRODUCTION M.C.F	NO. WELLS COMP ABD.
DRINKHOUSE, H. M., DOUGLAS, H. S., & HAMMERSLOUGH, A. M.									
KERN FRONT	U	3		3					

COMPANY FIELD, AREA OR POOL	CLASS	NUMBER OF WELLS: SHUT IN	PRODUCING	TOTAL	CRUDE PRODUCTION: BARRELS DAILY	BARRELS	EXCESS OR SHORTAGE BARRELS	GAS PRODUCTION M.C.F	NO. WELLS COMP ABD.
POSO CREEK GROUP-PREMIER-MAIN AREA	U		1	1	6	170			
COMPANY TOTAL		3	1	4	6	170			
DUCREE OIL COMPANY									
LONG BEACH-OLD AREA-UPPER POOLS	U		1	1	19	560		110	
DUMM BROS PETROLEUM CORPORATION									
EDISON-WEST AREA	U		2	2	223	6,676			
HUNTINGTON BEACH-HUNTINGTON AVE-JONES	S		1	1	25	750	54	700	1
WILMINGTON-HARBOR-FB-IV-RANGER	U		4	4	55	1,640		1,170	
HARBOR-FBV-RANGER	U		4	4	34	1,011		1,103	
TOWN LOT-TAR-RANGER-TERMINAL	U		4	4	56	1,674		1,044	
COMPANY TOTAL			15	15	393	11,751	54	4,017	1
DUNLAP, D. D. & DOROTHY									
NEWPORT WEST-ALDRICH AREA-B	U		7	7	185	5,545			
ALDRICH AREA-C	U		1	1	5	144			
ANAHEIM SUGAR AREA	U		5	5	343	10,299		399	
MAIN AREA	U	1	2	3	12	371			
COMPANY TOTAL		1	15	16	545	16,359		399	
DUNLAP & GRAHAM WELL #1									
FRESNO GROUP-RAISIN CITY-MIOCENE	U		6	6	349	10,482		5,400	
DUNLAP & JONES									
LONG BEACH-OLD AREA-UPPER POOLS	U		1	1	16	495		168	
DUNLAP, D. D., & MILLER, C. R.									
HUNTINGTON BEACH-NORTH AREA-ASHTON	U		1	1	9	281		452	
DUNLAP, D. D., OIL COMPANY									
HUNTINGTON BEACH-NORTH AREA-ASHTON	U		1	1	19	560			
LONG BEACH-OLD AREA-UPPER POOLS	U		1	1				240	
WILMINGTON-HARBOR-FB-IV-TERMINAL U&L	U		2	2	120	3,600		610	
HARBOR-FBV-RANGER	U		1	1	17	510			
TOWN LOT-TAR-RANGER-TERMINAL	U		1	1	25	759			
COMPANY TOTAL			6	6	181	5,429		850	
DUNN, A. M.									
EDISON-EDISON GROVES AREA-D-L-K	U		4	4	32	970			
DUNSMOOR, MARGARET R.									
MCKITTRICK	U		3	3	9	275			
EAGLE OIL & REFINING COMPANY, INC.									
FRESNO GROUP-RAISIN CITY-TAR-MIOCENE	U	1		1					
RAISIN CITY-MIOCENE	U	5	13	18	711	21,329		2,350	
SAN JOAQUIN-EOCENE	U		1	1	21	628			
COMPANY TOTAL		6	14	20	732	21,957		2,350	
EAST PUENTE OIL COMPANY OF CALIFORNIA									
EDISON-MAIN AREA-FRACTURED SCHIST	U		3	3	68	2,035		300	

65499 O—55—17

COMPANY FIELD, AREA OR POOL	CLASS	NUMBER OF WELLS			CRUDE PRODUCTION		EXCESS OR SHORTAGE BARRELS	GAS PRODUCTION M.C.F	NO. WELLS
		SHUT IN	PRODUCING	TOTAL	BARRELS DAILY	BARRELS			COMP ABD
KERN RIVER	U		5	5	15	465			
MCKITTRICK	U	7	34	41	339	10,156		900	
COMPANY TOTAL		7	42	49	422	12,656		1,200	
EASTMONT OIL COMPANY									
ROUND MOUNTAIN GROUP-PYRAMID-VEDDER	U		5	5	37	1,121			
EASTON, EDWARD E., ESTATE OF									
SHIELLS CANYON-SESPE	U		4	4	21	640		228	
EASTON, E. M.									
TEJON HILLS-S	U		8	8	30	903			
EDGINGTON OIL REFINERIES, INC.									
OXNARD-MIOCENE	U		1	1	25	750		4	
EDISON OIL COMPANY									
EDISON-MAIN AREA-UPPER	U		6	6	27	804			
MAIN AREA-FRACTURED SCHIST	U		1	1	3	100			
COMPANY TOTAL			7	7	30	904			
EDMONDSON, E. V.									
LONG BEACH-OLD AREA-UPPER POOLS	U		1	1	4	126		200	
E & E PRODUCTION									
HUNTINGTON BEACH-NORTH AREA-ASHTON	U	1	2	3	11	342		440	
WHITTIER-RIDEOUT HEIGHTS AREA	U		1	1	9	263			
COMPANY TOTAL		1	3	4	20	605		440	
ELECTRO-CAP, INCORPORATED									
NEWPORT-MESA AREA-CAGNEY	U	1		1					
ELLIOTT, D. W.									
LONG BEACH-OLD AREA-UPPER POOLS	U		1	1	4	128		199	
ELLIOTT, D. W., ALAMITOS LAND									
SEAL BEACH-ALAMITOS AREA	U		2	2	47	1,416		1,190	
ELLIOTT, D. W., INC.									
LONG BEACH-OLD AREA-UPPER POOLS	U		1	1	8	233		142	
ELLIOTT, D. W., OPERATING ACCOUNT									
NEWPORT WEST-MAIN AREA	U		4	4	37	1,106			
ELLIOTT-HERLEY-MARSHALL, PARTNERSHIP									
WILMINGTON-TOWN LOT-TAR-RANGER-TERMINAL	U		3	3	82	2,459		1,765	
TOWN LOT-FORD	U		1	1	6	182		210	
COMPANY TOTAL			4	4	88	2,641		1,975	
ELLIOTT & MICKLE									
SEAL BEACH-ALAMITOS AREA	U		1	1	9	277		1,334	
ELLIOTT, W. M.									
HUNTINGTON BEACH-NORTH AREA-TAR BOLSA	U		1	1	9	270			

COMPANY FIELD, AREA OR POOL	CLASS	NUMBER OF WELLS: SHUT IN	PRODUCING	TOTAL	CRUDE PRODUCTION: BARRELS DAILY	BARRELS	EXCESS OR SHORTAGE BARRELS	GAS PRODUCTION M.C.F	NO WELLS COMP ABD.
NORTH AREA-ASHTON	U		4	4	46	1,372		3,104	
COMPANY TOTAL			5	5	55	1,642		3,104	
ELLIOTT, W. M., JR.									
HUNTINGTON BEACH-NORTH AREA-ASHTON	U		1	1	5	160		311	
ELLIS, F. E.									
TORRANCE-MAIN	U		1	1	5	150			
E-LYNN-K OIL CO									
TORRANCE-MAIN	U		1	1	6	180		113	
E. M. E. OIL OPERATORS									
PLACERITA-OLD AREA	U		9	9	155	4,642			
EMERALD OIL COMPANY, THE									
SEAL BEACH-ALAMITOS AREA	U		1	1	13	390		298	
TORRANCE-MAIN	U		1	1	9	277		141	
COMPANY TOTAL			2	2	22	667		439	
EMPIRE OIL COMPANY									
SANTA PAULA GRP-TIMBER CANYON-MAIN	U		4	4	4	114			
ENGINEERS OIL COMPANY									
MIDWAY-SUNSET-MIDWAY WEST-UPPER	U	1	8	9	47	1,400		500	
E & N PARTNERSHIP									
EDISON-EDISON GROVES AREA-D-L-K	U		4	4	45	1,352			1
ENTERPRISE OIL COMPANY									
CYMRIC-SALT CREEK WEST AREA-PHACOIDES	U		4	4	23	700			
ESSEX DRILLING COMPANY									
EDISON-PORTALS-FAIRFAX AREA-WICKER	U		3	3	30	901		100	
ESSEX OIL & GAS COMPANY									
FRUITVALE-MARTIN-KERNCO	U		2	2	22	650		90	
ETHEL D. COMPANY									
MIDWAY SUNSET-MIDWAY WEST-UPPER	U	3	33	36	240	7,201		33,712	
EUREKA COMPANY									
POSO CREEK GROUP-MCVAN	U	3	4	7	8	244			
EXETER OIL COMPANY, LTD.									
MIDWAY-SUNSET-MIDWAY EAST-SHALLOW	U	3	3	6	12	356			
MIDWAY EAST-PAT	S		1	1	66	1,985	265*	1,495	
MIDWAY EAST-EXETER	S		3	3	563	16,890	5,610*	12,722	
MIDWAY WEST-UPPER	U		2	2	13	399			
OXNARD-MIOCENE	U	1	7	8	434	13,020			
LONG BEACH-OLD AREA-UPPER POOLS	U	1	3	4	32	964		607	
COMPANY TOTAL		5	19	24	1,120	33,614	5,875*	14,824	
EYER BROTHERS									
TORRANCE-MAIN	U		1	1	5	150		77	

COMPANY FIELD, AREA OR POOL	CLASS	NUMBER OF WELLS			CRUDE PRODUCTION		EXCESS OR SHORTAGE BARRELS	GAS PRODUCTION M.C.F	NO. WELLS
		SHUT IN	PRODUCING	TOTAL	BARRELS DAILY	BARRELS			COMP ABD.
DEL AMO	U		2	2	7	199		316	
COMPANY TOTAL			3	3	12	349		393	
EYERLY, BESSIE C.									
PLACERITA-OLD AREA	U		3	3	18	550			
FAIRBANKS, D. E.									
HUNTINGTON BEACH-SOUTH ON-SHORE-MAIN	U		1	1	4	121			
FAIRBANKS, E. E.									
HUNTINGTON BEACH-SOUTH ON-SHORE-TAR	U		1	1	4	120			
SOUTH ON-SHORE-MAIN	U	1	2	3	12	366		90	
COMPANY TOTAL		1	3	4	16	486		90	
FAIRFIELD, F. E.									
OJAI GROUP-SISAR-SILVERTHREAD	U	3	18	21	35	1,050			1
SESPE CANYON GRP-FOOT OF THE HILL	U	1	3	4	34	1,015			
SOUTH MOUNTAIN-SESPE	U		1	1	4	125		113	
WILMINGTON-HARBOR-FBV-RANGER	U		1	1	6	190		218	
COMPANY TOTAL		4	23	27	79	2,380		331	1
FAIRFIELD-NICOLAI & SON									
HUNTINGTON BEACH-SOUTH ON-SHORE-TAR	U		2	2	17	525			
FAIRFIELD-VOLUNTEER PETROLEUM COMPANY									
F. E. FAIRFIELD, OPERATOR									
PIRU GROUP-HOLSER CANYON	U		2	2	31	943		200	
FALCON DRILLING AND ASSOCIATES									
EDISON-WEST AREA	U		1	1	4	133			
FARRELL, EDWARD									
WILMINGTON-TOWN LOT-TAR-RANGER-TERMINAL	U		3	3	48	1,430		30	
FEDERAL OIL COMPANY									
INGLEWOOD-SENTOUS	U		5	5	211	6,331		3,857	
NEWPORT WEST-MAIN AREA	U	1	6	7	62	1,858			
COMPANY TOTAL		1	11	12	273	8,189		3,857	
FEDERAL OIL COMPANY, OPERATOR									
CASTAIC HILLS-STERLING	S	1	2	3	37	1,119		2,219	
FEDERAL PETROLEUM COMPANY									
OBRIEN & TERRY, OPERATORS									
MOUNT POSO GROUP-DOMINION-VEDDER	U		3	3	18	540			
FELDMAN, D. D., OIL AND GAS									
SOUTH MOUNTAIN-SESPE	U		2	2	19	572		344	
WEST MOUNTAIN-SESPE	U		5	5	59	1,777		3,320	
COMPANY TOTAL			7	7	78	2,349		3,664	
FERGUSON & BOSWORTH									
KERN BLUFF	U	2	12	14	254	7,612			

COMPANY FIELD, AREA OR POOL	CLASS	NUMBER OF WELLS: SHUT IN	PRODUCING	TOTAL	CRUDE PRODUCTION: BARRELS DAILY	BARRELS	EXCESS OR SHORTAGE BARRELS	GAS PRODUCTION M.C.F	NO. WELLS COMP. ABD.
MCDONALD ANTICLINE-LAYMAN AREA	U	2	16	18	853	25,598		14,161	
CYMRIC-SALT CREEK WEST AREA-PHACOIDES	U		4	4	28	838			
MCKITTRICK	U		5	5	57	1,710			
TEMBLOR RANCH	U		1	1	2	66			
COMPANY TOTAL		4	38	42	1,194	35,824		14,161	
FERGUSON, J. C.									
COALINGA-WESTSIDE AREA-TEMBLOR	U		4	4	17	510			
FERNE OIL COMPANY									
KERN RIVER	U	3	6	9	40	1,214			
FERRO OIL COMPANY									
MIDWAY SUNSET-MIDWAY EAST-MARICOPA FLAT	U	1	7	8	41	1,235			
FETTERMAN, C. W.									
SESPE CANYON GRP-TOPA-TOPA	U	1	4	5	5	154			
F. & H. OIL COMPANY									
KERN RIVER	U	5	8	13	41	1,230			
F. H. S. OIL COMPANY									
TORRANCE-MAIN	U		1	1	8	248			
FIDDYMENT, DAVID									
HUNTINGTON BEACH-SOUTH ON-SHORE-TAR	U	1		1					
FIELD, O. C., ET AL.									
OPERATED BY UNION OIL COMPANY									
CAT CANYON EAST-SISQUOC-MONTEREY	U	2	2	4	46	1,372		472	
FINCH, VIOLA M.									
PLAYA DEL REY-VENICE AREA	U		1	1	7	212			
FINCO OIL COMPANY									
LONG BEACH-OLD AREA-UPPER POOLS	U		1	1	10	309		207	
FINLEY COMPANY									
COALINGA-WESTSIDE AREA-TEMBLOR	U	3	4	7	5	144			
MIDWAY SUNSET-MIDWAY WEST-UPPER	U		18	18	70	2,105			
COMPANY TOTAL		3	22	25	75	2,249			
FISHER, EDDIE									
HUNTINGTON BEACH-SLOUGH-RAMSER EAST	S		1	1	11	336	1,164*	150	
FIRST NATIONAL FINANCE CORPORATION									
EDISON-WEST AREA	U	1	2	3	15	443			
FLETCHER-BYSSHE-BARRATT									
EDISON-RACE TRACK HILL-VEDDER	S		1	1	42	1,272	562	14,062	
FLETCHER, D. S., BARRATT, M., & BYSSHE, ERNEST W., JR.									
WILMINGTON-TOWN LOT-TAR-RANGER-TERMINAL	U		4	4	48	1,449		583	

COMPANY FIELD, AREA OR POOL	CLASS	NUMBER OF WELLS			CRUDE PRODUCTION		EXCESS OR SHORTAGE BARRELS	GAS PRODUCTION M.C.F	NO. WELLS	
		SHUT IN	PRODUCING	TOTAL	BARRELS DAILY	BARRELS			COMP	ABD.
FLETCHER, LANCE										
OJAI GROUP-SISAR-SILVERTHREAD	U		1	1	4	115				
FLINTRIDGE OIL COMPANY										
FRUITVALE-MARTIN-KERNCO	U		3	3	100	3,005		2,786		
F. M. R. COMPANY										
HUNTINGTON BEACH-HUNTINGTON AVE-JONES	S		1	1	38	1,128	522*	1,100		
FORMAX OIL COMPANY										
MIDWAY-SUNSET-MIDWAY WEST-UPPER	U	1	40	41	523	15,700		800		
FOWLER, BOONE, & ASSOCIATES										
LONG BEACH-OLD AREA-UPPER POOLS	U		1	1	3	95		196		
FOWLER DRILLING & PRODUCING CO. & ASSOC										
INGLEWOOD-VICKERS	U		1	1	13	402				
FOWLER & MENVEG										
EDISON-WEST AREA	U		2	2	30	909				
FRANCIS, E. P.										
RICHFIELD-EAST AREA	U		1	1	3	100				
FRANCO PORT OIL COMPANY										
WILMINGTON-TOWN LOT-TAR-RANGER-TERMINAL	U		2	2	22	670				
FRANCO WESTERN OIL COMPANY										
EDISON-PORTALS-FAIRFAX AREA-WICKER	U		1	1	8	243		90		
WEST AREA	U		3	3	45	1,340		450		
CYMRIC-MCKITTRICK FRONT-LOWER	U	3	16	19	329	9,882		2,689		
PYRAMID HILLS-DAGANY	U		2	2	40	1,198		110		
OTHERS	U	1	10	11	133	3,992		558	2	
N.D.H.	S		3	3	220	6,596	4,054*	4,526	1	
COMPANY TOTAL		4	35	39	775	23,251	4,054*	8,423	3	
FRANKEL, DONALD, OPERATOR										
PLAYA DEL REY-EAST AREA-KIDSON	U	1		1						
FREDERICK OIL CORPORATION										
RICHFIELD-EAST AREA	U		1	1	14	434		563		
FREER, S. AL										
OJAI GROUP-SISAR-SILVERTHREAD	U		1	1	5	151				
FREUDENTHAL, DOWLING & MC GEE OIL CO.										
HUNTINGTON BEACH-HUNTINGTON AVE-JONES	S		2	2	73	2,177	1,459*	2,000	1	
FRYE, A. L.										
LONG BEACH-OLD AREA-UPPER POOLS	U		1	1	4	114		128		
FULLER, GLENN E.										
LONG BEACH-OLD AREA-UPPER POOLS	U		1	1	9	256		29		
GABRIEL OIL COMPANY										
MCKITTRICK	U	8	8	16	33	988				

COMPANY FIELD, AREA OR POOL	CLASS	NUMBER OF WELLS: SHUT IN	NUMBER OF WELLS: PRODUCING	NUMBER OF WELLS: TOTAL	CRUDE PRODUCTION: BARRELS DAILY	CRUDE PRODUCTION: BARRELS	EXCESS OR SHORTAGE BARRELS	GAS PRODUCTION M.C.F	NO. WELLS COMP. ABD.
GALE, REX C., ESTATE OF									
TORRANCE-MAIN	U		1	1	9	270			
GARRETT, ROY									
WILMINGTON-TOWN LOT-TAR-RANGER-TERMINAL	U		3	3	37	1,111		610	
TOWN LOT-FORD	U		1	1	5	154		137	
COMPANY TOTAL			4	4	42	1,265		747	
G. & B. ASSOCIATES									
OTHER FIELDS-CHICO-MARTINEZ	U	1		1					
GENERAL AMERICAN OIL COMPANY OF TEXAS									
BUENA VISTA-BUENA VISTA FRONT	U	16	20	36	374	11,221		1,698	
BUENA VISTA HILLS-OTHERS	U	10	24	34	280	8,398		5,120	
EDISON-MAIN AREA-UPPER	U		4	4	20	600			
MAIN AREA-FRACTURED SCHIST	U	1	3	4	42	1,252			
MIDWAY SUNSET-MIDWAY EAST-MARICOPA FLAT	U	4	9	13	86	2,570		13,124	
MIDWAY WEST-UPPER	U	7	48	55	501	15,044		6,047	
SANTA FE SPRINGS-OTHERS	U		2	2	22	675		3,084	
WILMINGTON-HARBOR-FB-IV-RANGER	U		2	2	63	1,887		1,303	
HARBOR-FB-IV-TERMINAL U & L	U		8	8	453	13,576		6,957	
HARBOR-FB-IVB-237	U		1	1	31	930		1,015	
HARBOR-FB-IVAB-FORD	U		2	2	65	1,955		1,910	
HARBOR-FB-IVD-UP-FORD-237	S		1	1	39	1,178		1,192	
TOWN LOT-TAR-RANGER-TERMINAL	U		53	53	720	21,614		5,204	
COMPANY TOTAL		38	177	215	2,696	80,900		46,654	
GENERAL EXPLORATION COMPANY OF CALIFORNIA									
NEWHALL-POTRERO-1-2-3	S		7	7	58	1,745	355*	13,160	
5TH	S		3	3	41	1,241	139*	943	
BANDINI	S		7	7	736	22,073	3,997*	57,103	1
LONG BEACH-NORTHWEST EXTENSION AREA	U	5	6	11	124	3,716		1,515	
COMPANY TOTAL		5	23	28	959	28,775	4,491*	72,721	1
GENERAL PETROLEUM CORPORATION									
BELRIDGE SOUTH	U	35	272	307	2,522	75,668		20,288	
BUENA VISTA-BUENA VISTA FRONT	U	6	20	26	130	3,892		1,385	
COALINGA-WESTSIDE AREA-TEMBLOR	U	12	17	29	170	5,103		1,650	
EDISON-MAIN AREA-UPPER	U		14	14	161	4,820		1,066	
MAIN AREA-FRACTURED SCHIST	U	2	6	8	63	1,901		354	
PORTALS-FAIRFAX AREA-WICKER	U		1	1	10	307		115	
WEST AREA	U	2		2					
RACE TRACK HILL-JEWETT	S	2	4	6	40	1,190		32,733	

COMPANY FIELD, AREA OR POOL	CLASS	NUMBER OF WELLS			CRUDE PRODUCTION		EXCESS OR SHORTAGE BARRELS	GAS PRODUCTION M.C.F	NO. WELLS	
		SHUT IN	PRODUCING	TOTAL	BARRELS DAILY	BARRELS			COMP	ABD.
RACE TRACK HILL-PYRAMID HILL	S		9	9	249	7,478		21,854		
RACE TRACK HILL-VEDDER	S		8	8	407	12,206	511	14,587		
JEPPI	U		1	1	58	1,731		1,341	1	
FRESNO GROUP-BURREL-MIOCENE	U		1	1	51	1,527		1,680		
HELM-LANARE AREA-MIOCENE	U	1	5	6	245	7,336		6,606		
HELM-LANARE AREA-EOCENE	U		1	1	10	286		121		
HELM-MAIN AREA-MIOCENE	S		8	8	404	12,125	9,038	6,884		
HELM-MAIN AREA-EOCENE	S	5	12	17	191	5,724		28,062		
FRUITVALE-MARTIN-KERNCO	U		5	5	262	7,864		440		
KERN FRONT	U		94	94	941	28,243		5,982		
KERN RIVER	U	8	12	20	69	2,064				
LOST HILLS-MAIN	U	29	164	193	1,273	38,201		23,289		
WILLIAMSON	U		2	2	14	420		576		
G-1	U		11	11	391	11,716		15,748		
COHN	U		8	8	166	4,992		9,534		
MIDWAY-SUNSET-MIDWAY EAST-SHALLOW	U	25	51	76	761	22,843		20,921		
MIDWAY EAST-LAKEVIEW	U	14	4	18	78	2,353		53		
MIDWAY EAST-GIBSON	U		3	3	39	1,165		3,969		
MIDWAY EAST-MARICOPA FLAT	U	1	9	10	202	6,070		1,367		
MIDWAY EAST-PACIFIC	U		2	2	28	840		3,115		
MIDWAY WEST-UPPER	U	61	239	300	2,334	70,018		38,373		
MIDWAY WEST-ETHEL D	U		9	9	387	11,620		14,947		
SANTIAGO-LEUTHOLTZ	S		7	7	264	7,906	16	4,248		
MOUNT POSO GROUP-MOUNT POSO-VEDDER	U		64	64	1,078	32,327				
MOUNTAIN VIEW-MAIN AREA-OTHERS	U	2	2	4	15	442				
PALOMA-MAIN AREA-PALOMA CRUDE OIL	S	2		2						
PYRAMID HILLS-DAGANY	U		5	5	99	2,972				
ROUND MOUNTAIN GROUP-SHARKTOOTH-VEDDER	U	4	10	14	136	4,094				
OTHER FIELDS-ROSEDALE RANCH	U		3	3	42	1,265		852		
CAPITAN-VAQUEROS	U	2	14	16	123	3,676				
ERBURU	U		4	4	8	245		2,158		
COVARRUBIAS	U		2	2	19	580		5,108		
PLACERITA-JUANITA AREA	U		1	1	32	960		530		
OLD AREA	U		21	21	462	13,855		7,409		
CAT CANYON WEST-ALEXANDER	U	1	17	18	745	22,356		5,950		
LOS FLORES	S		25	25	1,306	39,180	1,314	10,232		
SANTA MARIA VALLEY-MAIN	U	1	6	7	21	618		1,530		
RINCON-MAIN AREA-HOBSON TONSON-MILEY	U	3	25	28	533	15,996		11,643		
MAIN AREA-C-9	U		2	2	79	2,382		2,025		

COMPANY FIELD, AREA OR POOL	CLASS	NUMBER OF WELLS: SHUT IN	NUMBER OF WELLS: PRODUCING	NUMBER OF WELLS: TOTAL	CRUDE PRODUCTION: BARRELS DAILY	CRUDE PRODUCTION: BARRELS	EXCESS OR SHORTAGE BARRELS	GAS PRODUCTION M.C.F	NO. WELLS: COMP	NO. WELLS: ABD.
PADRE CANYON AREA-OTHERS	S	1	36	37	1,971	59,136	1,804	117,190		
VENTURA-A-3,B-3	S		1	1	1	19		64		
C-BLOCK	U		13	13	161	4,834		31,309		
D-5 WEST	S		4	4	117	3,515	1,175	22,823		
D-6 WEST	S		2	2	64	1,913		6,817		
D-7 D-8	S		10	10	665	19,944		30,851		
SAN ARDO-CAMPBELL AREA-LOMBARDI	S	3	193	196	12,609	378,283	23,617	134,103	3	
CAMPBELL AREA-AURIGNAC	S	1	58	59	2,826	84,790	33,490	46,432	1	
BREA OLINDA-BREA AREA-OTHERS	U	1	6	7	121	3,642				
OLINDA AREA	U		30	30	70	2,105		2,078		
TONNER AREA	S	2	21	23	664	19,918		33,263		
INGLEWOOD-SENTOUS	U		1	1	35	1,038		1,194		
LONG BEACH-OLD AREA-UPPER POOLS	U	5	43	48	539	16,164		21,841		
OLD AREA-DE SOTO SOUTH FLANK	U		2	2	46	1,381		1,661		
RICHFIELD-EAST AREA	U	1	27	28	274	8,231		9,927		
SANTA FE SPRINGS-OTHERS	U	13	130	143	3,871	116,136		110,034	1	
TORRANCE-MAIN	U		19	19	417	12,496		12,723		
DEL AMO	U		11	11	143	4,292		4,519		
WILMINGTON-TERMINAL-FB-I-TAR-RGR.-TERM	U	1	34	35	1,200	35,990		15,716		
TERMINAL-FB-I-FORD	U		6	6	190	5,707		5,936		
TERMINAL-FB-I-237	U		4	4	176	5,291		5,899		
TERMINAL-FB-II-TAR RANGER	U	1	22	23	557	16,718		18,493		1
TERMINAL-FB-II-FORD	U		5	5	97	2,923		3,259		
TERMINAL-FB-II-237	U		1	1	45	1,355		1,511		
TERMINAL-FB-IIA-TERMINAL U&L	S		1	1	85	2,556		2,850		
HARBOR-FB-IV-TAR	U		3	3	23	702		409		3
HARBOR-FB-IV-RANGER	U	1	7	8	185	5,538		3,356		4
HARBOR-FB-IV-TERMINAL U&L	U	2	24	26	1,386	41,583		26,386		
HARBOR-FB-IVB-237	U		1	1	6	177		126		
HARBOR-FB-IVAB-FORD	U		3	3	61	1,838		1,171		
HARBOR-FB-IVD-UP-FORD-237	S		10	10	109	3,277		2,246		
HARBOR-FBV-RANGER	U	3	22	25	206	6,184		4,460		
HARBOR-FB-VA-TERMINAL U&L	U	2	1	3	16	492		351		
HARBOR-FB-VB-UPPER TERMINAL	S	4	4	8	12	375		267		
TOWN LOT-TAR-RANGER-TERMINAL	U	1	9	10	187	5,607		3,044		
COMPANY TOTAL		260	1,964	2,224	45,753	1372,707	70,965	1011,034	6	8
GENERAL PETROLEUM CORPORATION #										
OTHER FIELDS-CALDER-STEVENS	U		1	1	49	1,467		2,049		
DEL VALLE-SOUTH AREA	U				4	135				

COMPANY FIELD, AREA OR POOL	CLASS	NUMBER OF WELLS: SHUT IN	NUMBER OF WELLS: PRODUCING	NUMBER OF WELLS: TOTAL	CRUDE PRODUCTION: BARRELS DAILY	CRUDE PRODUCTION: BARRELS	EXCESS OR SHORTAGE BARRELS	GAS PRODUCTION M.C.F	NO. WELLS COMP ABD.
SANTA MARIA VALLEY-MAIN	U	8	24	32	454	13,624		55,730	
VENTURA-C-BLOCK	U		1	1	17	521		1,420	
D-3	U		1	1	15	439		631	
D-5 WEST	S				31	922	38*	894	
D-5,6 EAST	S		1	1	41	1,222		1,303	
D-5,6 NORTH	S		4	4	264	7,918	583	10,882	
D-6 WEST	S	1	1	2	94	2,821	121	9,920	
D-7 D-8	S		1	1	93	2,802		2,659	
LONG BEACH-OLD AREA-WARDLOW	U	1	5	6	134	4,009		8,951	
AIRPORT AREA	S		4	4	1,542	46,264	19,115	191,254	1
COMPANY TOTAL		10	43	53	2,738	82,144	19,781	285,693	1
GERARD, W. R.									
EDISON-MAIN AREA-FRACTURED SCHIST	U		2	2	3	94		47	
SANTA MARIA VALLEY-MAIN	U		9	9	38	1,131		25,466	
COMPANY TOTAL			11	11	41	1,225		25,513	
GETTY, J. PAUL									
EDISON-PORTALS-FAIRFAX AREA-WICKER	U		21	21	137	4,118			
WEST AREA	U	2	12	14	212	6,361			
JEPPI	U		1	1	21	637		7,026	
MOUNTAIN VIEW-MAIN AREA-OTHERS	U		9	9	70	2,106		687	
ROSECRANS-ATHENS AREA-O DEA	U		1	1	18	555		1,339	
SEAL BEACH-ALAMITOS AREA	U	1	2	3	19	570		372	
COMPANY TOTAL		3	46	49	477	14,347		9,424	
GETTY, SARAH C., ESTATE OF									
ROSECRANS-HOWARD TOWNSITE AREA-7&8	U		4	4	58	1,737		11,014	
G. & H. OIL COMPANY									
PYRAMID HILLS-ELLISON	S		1	1	166	4,992	492	5,250	
GIBRALTAR OIL COMPANY									
EDISON-PORTALS-FAIRFAX AREA-WICKER	U		1	1	10	299		1,000	
WEST AREA	U		1	1	18	555		1,500	
COMPANY TOTAL			2	2	28	854		2,500	
GIBSON, LEE, OIL COMPANY									
FRESNO GROUP-BURREL-MIOCENE	U		1	1	41	1,224		168	
HELM-LANARE AREA-MIOCENE	U			4	212	6,350		10,596	
RAISIN CITY-MIOCENE	U	1	2	3	74	2,223		556	
COMPANY TOTAL		1	7	8	327	9,797		11,320	
GIESSNER, H.									
LONG BEACH-OLD AREA-UPPER POOLS	U		1	1	10	306		768	
GILLILAND OIL COMPANY									
ALFERITZ-UPPER	U	6	4	10	20	586			

COMPANY FIELD, AREA OR POOL	CLASS	NUMBER OF WELLS: SHUT IN	PRODUCING	TOTAL	CRUDE PRODUCTION: BARRELS DAILY	BARRELS	EXCESS OR SHORTAGE BARRELS	GAS PRODUCTION M.C.F	NO. WELLS COMP ABD
STRODE	U	3	21	24	205	6,157		1,045	
MILLER	U		12	12	416	12,490		19,323	
COMPANY TOTAL		9	37	46	641	19,233		20,368	
GILMORE ASSOCIATES #1									
HUNTINGTON BEACH-SOUTH ON-SHORE-TAR	U		1	1	6	188		50	
GILMORE ASSOCIATES #2									
HUNTINGTON BEACH-SOUTH ON-SHORE-TAR	U		1	1	6	178		50	
GILMOUR, LLOYD S.									
EDISON-PORTALS-FAIRFAX AREA-WICKER	U		3	3	19	574			
MOUNTAIN VIEW-MAIN AREA-OTHERS	U	2		2					
COMPANY TOTAL		2	3	5	19	574			
G. & M. OIL CO.									
BEVERLY HILLS-WOLFSKILL	U		2	2	89	2,661		309	
GOFORTH, H. L.									
CYMRIC-MCKITTRICK FRONT-UPPER	U	1	4	5	72	2,154			
MCKITTRICK	U	1	3	4	18	552			
COMPANY TOTAL		2	7	9	90	2,706			
GOFORTH, H. L., OPERATOR									
CYMRIC-MCKITTRICK FRONT-UPPER	U	2	6	8	57	1,719			
GOLDEN BEAR OIL COMPANY									
FRUITVALE-MARTIN-KERNCO	U	1	17	18	179	5,383			
KERN RIVER	U	1	5	6	13	402			
MIDWAY SUNSET-MIDWAY WEST-UPPER	U	2	9	11	117	3,500			
MOUNT POSO GROUP-GRANITE CANYON-VEDDER	U	2	18	20	84	2,532			
POSO CREEK GROUP-ENAS	U	1	3	4	10	296			
PREMIER MAIN AREA	U		35	35	470	14,095		304	
ROUND MT GROUP-COFFEE CANYON-VEDDER	U		13	13	88	2,633			
ROUND MOUNTAIN-VEDDER	U		4	4	22	668			
COMPANY TOTAL		7	104	111	983	29,509		304	
GOODKNIGHT, LOGAN H.									
INGLEWOOD-VICKERS	U	4		4					
SENTOUS	U		1	1	6	190		225	
COMPANY TOTAL		4	1	5	6	190		225	
GRABLE & ERVINE									
HUNTINGTON BEACH-HUNTINGTON AVE-JONES	S		1	1	56	1,675	7*	1,600	1
GRAHAM, D. H., & ASSOCIATES									
FRESNO GROUP-RAISIN CITY-TAR-MIOCENE	U		1	1	42	1,250		600	
RAISIN CITY-MIOCENE	U		3	3	185	5,558		1,950	
COMPANY TOTAL			4	4	227	6,808		2,550	
GRAHAM, D. H., & ASSOCIATES WELL #2									
FRESNO GROUP-RAISIN CITY-MIOCENE	U		2	2	88	2,634		900	

COMPANY FIELD, AREA OR POOL	CLASS	NUMBER OF WELLS: SHUT IN	PRODUCING	TOTAL	CRUDE PRODUCTION: BARRELS DAILY	BARRELS	EXCESS OR SHORTAGE BARRELS	GAS PRODUCTION M.C.F	NO. WELLS COMP ABD.
GRAHAM, D. H., & ASSOCIATES WELL #3									
FRESNO GROUP-RAISIN CITY-MIOCENE	U		3	3	69	2,075		1,150	
GRAHAM & DUNLAP									
FRESNO GROUP-RAISIN CITY-TAR-MIOCENE	U		1	1	40	1,200		100	
RAISIN CITY-MIOCENE	U		3	3	139	4,176		300	
COMPANY TOTAL			4	4	179	5,376		400	
GRANADA OIL INDUSTRIES, INC.									
WILMINGTON-TOWN LOT-TAR-RANGER-TERMINAL	U		1	1	18	527			
GRANER OIL COMPANY									
PLAYA DEL REY-VENICE AREA	U		18	18	169	5,076		5,274	
TORRANCE-MAIN	U	2	7	9	41	1,244		2,424	
COMPANY TOTAL		2	25	27	210	6,320		7,698	
GRASCO OIL COMPANY, INC.									
FRUITVALE-MARTIN-KERNCO	U		2	2	21	624		90	
GRAVES, J. W.									
HUNTINGTON BEACH-SOUTH ON-SHORE-TAR	U		1	1	1	36			
GREAT BASINS PETROLEUM COMPANY, THE									
VENTURA-D-5,6 NORTH	S		1	1	8	246		175	
GREAT LAKES OIL & CHEMICAL COMPANY									
EDISON-WEST AREA	U		3	3	71	2,138			
KERN RIVER	U		15	15	144	4,311			
MOUNTAIN VIEW-MAIN AREA-OTHERS	U		3	3	20	597		100	
BARDSDALE-SESPE	U		1	1	4	131		32	
EOCENE	U		4	4	75	2,263		16,547	
INGLEWOOD-VICKERS	U	1	7	8	39	1,177			
MOYNIER	U		1	1	10	304		270	
SENTOUS	U		6	6	66	1,989		1,983	
WILMINGTON-TOWN LOT-TAR-RANGER-TERMINAL	U		9	9	113	3,393		150	
COMPANY TOTAL		1	49	50	542	16,303		19,082	
GREAT NORTHERN OIL COMPANY									
RICHFIELD-EAST AREA	U		2	2	21	644		339	
GREEN PETROLEUM COMPANY									
MOUNTAIN VIEW-ARVIN AREA-H S J-2	U		1	1	45	1,357		1,800	
GREER, GEORGE J.									
TAYLOR CANYON	U		1	1	9	266		100	
GREER, P. H., CO. INC.									
MOUNTAIN VIEW-MAIN AREA-OTHERS	U		6	6	49	1,478			
GRIGGS, F. C., & ASSOCIATES									
RUSSELL RANCH-NORRIS-GRIGGS DIBBLEE	U		4	4	56	1,693		1,335	

COMPANY FIELD, AREA OR POOL	CLASS	NUMBER OF WELLS: SHUT IN	NUMBER OF WELLS: PRODUCING	NUMBER OF WELLS: TOTAL	CRUDE PRODUCTION: BARRELS DAILY	CRUDE PRODUCTION: BARRELS	EXCESS OR SHORTAGE BARRELS	GAS PRODUCTION M.C.F	NO. WELLS COMP. ABD.
GRIGGS, F. C., & ASSOCIATES									
RUSSELL RANCH-NORRIS-GRIGGS DIBBLEE	U		4	4	56	1,693		1,335	
GROEN, C. J.									
MONTEBELLO-WEST AREA	U		1	1	3	105		90	
GUIJARRAL SERVICE COMPANY									
COALINGA-WESTSIDE AREA-TEMBLOR	U	18	39	57	184	5,533		551	
GULCH PETROLEUM COMPANY									
MOODY GULCH-LOS GATOS	U	2		2					
HAINES, A.									
LONG BEACH-OLD AREA-UPPER POOLS	U		4	4	32	960		1,725	
HALLMARK OIL COMPANY									
MIDWAY-SUNSET-MIDWAY EAST-SHALLOW	U	1		1					
MIDWAY EAST-LAKEVIEW	U		5	5	53	1,590		60	
COMPANY TOTAL		1	5	6	53	1,590		60	
HAMILTON & SHERMAN, OPERATORS									
HUNTINGTON BEACH-SOUTH OFF-SHORE-MAIN	U		1	1	129	3,870		524	
HAMILTON, W. J., OPERATOR									
HUNTINGTON BEACH-NORTH AREA-TAR BOLSA	U		1	1	15	450		10	
TORRANCE-MAIN	U		2	2	33	1,005		1,253	
COMPANY TOTAL			3	3	48	1,455		1,263	
HAMMIL OIL CORPORATION									
HUNTINGTON BEACH-SOUTH OFF-SHORE-MAIN	U		1	1	13	404		407	
HAMPTON & COMPANY, INC., ESTATE OF									
PLAYA DEL REY-VENICE AREA	U		1	1	16	495		300	
HANCOCK OIL COMPANY									
CANFIELD GROUP-GOSFORD EAST-STEVENS	S		5	5	280	8,403	623	13,277	
RUSSELL RANCH-MAIN AREA-SLOAN	U		4	4	232	6,965		2,638	
MAIN AREA-COLGROVE NORTH	U		6	6	314	9,422		7,827	
MAIN AREA-COLGROVE SOUTH	U		2	2	20	611		532	
NORRIS-GRIGGS DIBBLEE	U		1	1	3	87		210	
TAYLOR CANYON	U		2	2	115	3,442		900	
MIDWAY SUNSET-MIDWAY EAST-MARICOPA FLAT	U		3	3	31	923		701	
MOUNTAIN VIEW-MAIN AREA-WIBLE-NOZU	U		1	1	9	270		121	
MAIN AREA-OTHERS	U	4	5	9	69	2,067		924	
PALOMA-MAIN AREA-PALOMA CRUDE OIL	S		2	2	48	1,426	164*	50,138	
OTHER FIELDS-UNION AVENUE	U	2	2	4	46	1,372		300	
LONG BEACH-OLD AREA-UPPER POOLS	U	2	13	15	173	5,199		4,270	
OLD AREA-DE SOTO SOUTH FLANK	U		1	1	12	355		1,275	
SEAL BEACH-NORTH-EAST EXT.-MCGRATH	S		3	3	546	16,393	2,993	8,100	1
WILMINGTON-HARBOR-FB-IV-RANGER	U	1	3	4	146	4,368		2,179	
HARBOR-FB-IV-TERMINAL U&L	U	4	23	27	1,597	47,913		21,332	

COMPANY FIELD, AREA OR POOL	CLASS	NUMBER OF WELLS: SHUT IN	PRODUCING	TOTAL	CRUDE PRODUCTION: BARRELS DAILY	BARRELS	EXCESS OR SHORTAGE BARRELS	GAS PRODUCTION M.C.F	NO. WELLS COMP ABD.
HARBOR-FB-IVD-UP-FORD-237	S		2	2	55	1,640		1,441	
HARBOR-FBV-RANGER	U		5	5	87	2,606		772	
COMPANY TOTAL		13	83	96	3,783	113,462	3,452	116,937	1
HANCOCK OIL COMPANY #									
SANTA MARIA VALLEY-MAIN	U	8	25	33	454	13,625		55,730	
LONG BEACH-OLD AREA-WARDLOW	U		9	9	149	4,469		11,255	
AIRPORT AREA	S		4	4	1,542	46,265	19,115	191,254	1
COMPANY TOTAL		8	38	46	2,145	64,359	19,115	258,239	1
HANSCO OIL									
KERN FRONT	U		1	1	3	100			
HANSMEYER, J. C.									
PLACERITA-JUANITA AREA	U		1	1	13	399			
TORRANCE-MAIN	U		2	2	13	385		298	
COMPANY TOTAL			3	3	26	784		298	
HARDEN, M. P.									
FRUITVALE-MARTIN-KERNCO	U	1	1	2	6	180			
HARMOR PETROLEUM COMPANY									
HUNTINGTON BEACH-NORTH AREA-ASHTON	U		1	1	16	469		180	
LONG BEACH-OLD AREA-UPPER POOLS	U		6	6	58	1,752		885	
SANTA FE SPRINGS-OTHERS	U		1	1	70	2,096		397	
WILMINGTON-HARBOR-FBV-RANGER	U		1	1	10	300		240	
COMPANY TOTAL			9	9	154	4,617		1,702	
HARNISH, LLOYD A., OPERATOR									
GUIJARRAL HILLS-LEDA NORTH	S		5	5	381	11,437	83*	59,531	1
HILLS-WEST-LEDA	S	1	1	2	25	750	5,490*	253	
COMPANY TOTAL		1	6	7	406	12,187	5,573*	59,784	1
HARRELL, SLIM, ASSOCIATES, LTD.									
HUNTINGTON BEACH-SOUTH ON-SHORE-TAR	U		1	1	11	344			
HARRIS, R. M.									
MIDWAY SUNSET-MIDWAY EAST-MARICOPA FLAT	U	3	2	5	12	348			
TORRANCE-MAIN	U	2	13	15	52	1,570		400	
COMPANY TOTAL		5	15	20	64	1,918		400	
HARRISON, L. W.									
FRUITVALE-MARTIN-KERNCO	U	1		1					
HARRISON, NANCY E.									
LONG BEACH-OLD AREA-UPPER POOLS	U		1	1	33	992		229	
HARRISON OIL									
FRUITVALE-MARTIN-KERNCO	U		4	4	29	875			
HARTH, H. A., JR.									
HUNTINGTON BEACH-NORTH AREA-ASHTON	U	1							

COMPANY FIELD, AREA OR POOL	CLASS	NUMBER OF WELLS: SHUT IN	PRODUCING	TOTAL	CRUDE PRODUCTION: BARRELS DAILY	BARRELS	EXCESS OR SHORTAGE BARRELS	GAS PRODUCTION M.C.F	NO. WELLS COMP ABD.
HARTH, H. A., JR.									
HUNTINGTON BEACH-NORTH AREA-ASHTON	U		1						
HAST OIL COMPANY, THE									
KERN RIVER	U		9	9	13	390			
HATHAWAY BROTHERS									
SANTA FE SPRINGS-OTHERS	U		3	3	33	988		2,407	
HATHAWAY COMPANY									
OAK CANYON-1-A	U		2	2	6	180		140	
COYOTE EAST-HUALDE	U	1	7	8	84	2,512		1,378	
ANAHEIM	U		24	24	128	3,829		1,363	
MIOCENE A	U		17	17	83	2,500		2,665	
LONG BEACH-OLD AREA-UPPER POOLS	U		4	4	46	1,393		1,321	
MONTEBELLO-WEST AREA	U		4	4	22	655		524	
RICHFIELD-EAST AREA	U		26	26	330	9,907		11,868	1
SANTA FE SPRINGS-OTHERS	U		21	21	429	12,859		12,715	
OTHER FIELDS-LEFFINGWELL	U		9	9	255	7,657		26,142	
COMPANY TOTAL		1	114	115	1,383	41,492		58,116	1
HAVENSTRITE OIL COMPANY									
EDISON-WEST AREA	U	1	10	11	63	1,885		535	
MIDWAY SUNSET-MIDWAY EAST-MARICOPA FLAT	U		1	1	8	228		169	
SOUTH MOUNTAIN-SESPE	U		17	17	292	8,764		13,012	
LONG BEACH-OLD AREA-UPPER POOLS	U		2	2	53	1,589		846	
OLD AREA-DE SOTO SOUTH FLANK	U		1	1	27	811		1,206	
COMPANY TOTAL		1	31	32	443	13,277		15,768	
H. & B. OIL COMPANY									
COALINGA-WESTSIDE AREA-TEMBLOR	U		4	4	4	110			
MIDWAY-SUNSET-MIDWAY EAST-SHALLOW	U	1	2	3	34	1,025			
COMPANY TOTAL		1	6	7	38	1,135			
H. B. OIL COMPANY									
HUNTINGTON BEACH-SOUTH OFF-SHORE-MAIN	U	1	1	2	23	697		245	
HEARN COMPANY									
SANSINENA-WEST-NEW ENGLAND-MIOCENE D	U		2	2	28	836			
SANTA FE SPRINGS-OTHERS	U		2	2	6	183		50	
COMPANY TOTAL			4	4	34	1,019		50	
HEASLEY, W. E., MRS.									
MIDWAY SUNSET-MIDWAY WEST-UPPER	U		2	2	10	299			
HEDGES OIL COMPANY									
HUNTINGTON BEACH-HUNTINGTON AVE-JONES	S		9	9	261	7,828	2,016*	2,500	7
H. E. F. COMPANY									
WILMINGTON-HARBOR-FB-IV-TAR	U		1	1	12	364			
HARBOR-FBV-RANGER	U		2	2	16	482			
COMPANY TOTAL			3	3	28	846			

COMPANY FIELD, AREA OR POOL	CLASS	NUMBER OF WELLS			CRUDE PRODUCTION		EXCESS OR SHORTAGE BARRELS	GAS PRODUCTION M.C.F	NO. WELLS	
		SHUT IN	PRODUCING	TOTAL	BARRELS DAILY	BARRELS			COMP	ABD.
HELLMAN-BARDSDALE										
BARDSDALE-EOCENE	U		1	1	26	769		703		
HELLMAN ESTATE										
SEAL BEACH-NORTH BLOCK-SELOVER	U		2	2	20	587		1,568		
NORTH BLOCK-WASEM	U		15	15	516	15,485		22,462		
NORTH BLOCK-MCGRATH	S		29	29	2,105	63,149	1,559*	159,931		
NORTH-EAST EXT.-MCGRATH	S		1	1	66	1,978	1,178	861	1	
SOUTH BLOCK-BIXBY SELOVER	U		1	1	10	310		787		
SOUTH BLOCK-WASEM	U	1	1	2	7	212		2,634		
COMPANY TOTAL		1	49	50	2,724	81,721	381*	188,243	1	
HELM & SMITH OIL COMPANY										
KERN RIVER	U		22	22	40	1,188				
HEMBROOK OIL COMPANY										
LONG BEACH-OLD AREA-UPPER POOLS	U		4	4	32	954		890		
WILMINGTON-TOWN LOT-TAR-RANGER-TERMINAL	U		1	1	19	567		497		
COMPANY TOTAL			5	5	51	1,521		1,387		
HENDERSON, H. G.										
COYOTE EAST-ANAHEIM	U	2	1	3	7	220				
HENRY, R. W.										
FRUITVALE-MARTIN-KERNCO	U	1	1	2	6	180				
HENTHORN, E. L.										
OJAI GROUP-TIP-TOP	U	4	4	8	1	17		2		
HERLEY, JACK, OPERATIONS										
OXNARD-MIOCENE	U	2	1	3	284	8,524		3,000		
HERLEY, JACK, & KELLEY, PAUL L.										
DEL VALLE-WEST AREA-VASQUEZ-VIDEGAIN	S		3	3	59	1,776		2,196		
RAMONA-KERN DEL VALLE	S		13	13	276	8,273		18,803		
LONG BEACH-OLD AREA-DE SOTO SOUTH FLANK	U		1	1	4	135		124		
ROSECRANS-ATHENS AREA-UPPER	U		1	1	7	216		135		
SOUTH AREA-O DEA	U		1	1	6	184		160		
WILMINGTON-TOWN LOT-TAR-RANGER-TERMINAL	U		6	6	101	3,037		1,200		
COMPANY TOTAL			25	25	453	13,621		22,618		
HERLEY-KELLEY										
DOMINGUEZ-WEST BLOCK-MIOCENE 6,768	S		4	4	68	2,053		1,624		
HERLEY-KELLEY OIL OPERATIONS										
MONTEBELLO-WEST AREA	U	3	5	8	118	3,534		3,734		
HERMANSEN, MELVIN D.										
TORRANCE-MAIN	U		1	1	12	350		373		
DEL AMO	U		2	2	18	535		427		
COMPANY TOTAL			3	3	30	885		800		

COMPANY FIELD, AREA OR POOL	CLASS	NUMBER OF WELLS: SHUT IN	NUMBER OF WELLS: PRODUCING	NUMBER OF WELLS: TOTAL	CRUDE PRODUCTION: BARRELS DAILY	CRUDE PRODUCTION: BARRELS	EXCESS OR SHORTAGE BARRELS	GAS PRODUCTION M.C.F	NO. WELLS COMP. ABD.
DEL AMO	U		2	2	25	746		800	
COMPANY TOTAL			3	3	30	885			

COMPANY FIELD, AREA OR POOL	CLASS	NUMBER OF WELLS: SHUT IN	NUMBER OF WELLS: PRODUCING	NUMBER OF WELLS: TOTAL	CRUDE PRODUCTION: BARRELS DAILY	CRUDE PRODUCTION: BARRELS	EXCESS OR SHORTAGE BARRELS	GAS PRODUCTION M.C.F	NO. WELLS COMP. ABD.
H. & G. OIL CORPORATION									
LONG BEACH-OLD AREA-UPPER POOLS	U		1	1	17	524		349	
H. H. & F. OIL COMPANY									
KERN RIVER	U		17	17	92	2,748			
H. H. & W. OIL COMPANY									
PLACERITA-JUANITA AREA	U		2	2	36	1,077			
HILL, HARRY J., OPERATOR									
HUNTINGTON BEACH-SLOUGH-RAMSER EAST	S		1	1	160	4,804	596*	9,000	1
HIWA PETROLEUM CORPORATION									
LONG BEACH-OLD AREA-UPPER POOLS	U		1	1	4	120		473	
HOCKING, GEORGE									
LONG BEACH-OLD AREA-UPPER POOLS	U	3	3	6	16	467		269	
HOCKING, GEORGE, HATCHER, HOMER, & HATCHER, J. L.									
LONG BEACH-OLD AREA-UPPER POOLS	U		2	2	17	513		383	
HOLLY DEVELOPMENT COMPANY									
HUNTINGTON BEACH-HUNTINGTON AVE-JONES	S		6	6	303	9,079	824*	13,576	1
NORTH AREA-ASHTON	U		5	5	62	1,867		1,383	
WILMINGTON-TOWN LOT-TAR-RANGER-TERMINAL	U		3	3	82	2,462		2,395	
COMPANY TOTAL			14	14	447	13,408	824*	17,354	1
HOLLY OIL COMPANY									
HUNTINGTON BEACH-NORTH AREA-ASHTON	U		10	10	46	1,390		939	
HOLLYWOOD OIL COMPANY									
WILMINGTON-HARBOR-FB-IV-RANGER	U		6	6	60	1,789		1,453	
HARBOR-FB-IV-TERMINAL U&L	U		2	2	20	588		482	
COMPANY TOTAL			8	8	80	2,377		1,935	
HOLMES DRILLING COMPANY									
HUNTINGTON BEACH-NORTH AREA-TAR BOLSA	U		1	1	9	271			
HOLMES, ELLINOR R.									
MIDWAY-SUNSET-MIDWAY EAST-SHALLOW	U		2	2	5	153			
HONOLULU OIL CORPORATION									
BUENA VISTA-BUENA VISTA FRONT	U	30		30					
BUENA VISTA HILLS-OTHERS	U	31	149	180	1,172	35,160		104,425	
BELGIAN ANTICLINE NW-MORIQUI-PHACOIDES	S		1	1	54	1,616		4,053	
CYMRIC-WELPORT AREA-SHALLOW	U	4	17	21	136	4,074			
WELPORT AREA-FITZGERALD	U	1	2	3	13	388		152	
WELPORT AREA-PHACOIDES	U		2	2	36	1,093		1,291	
WELPORT AREA-OCEANIC	U	4	11	15	830	24,890		8,695	
WELPORT AREA-WOODY	U		2	2	29	878		5,755	

COMPANY FIELD, AREA OR POOL	CLASS	NUMBER OF WELLS: SHUT IN	PRODUCING	TOTAL	CRUDE PRODUCTION: BARRELS DAILY	BARRELS	EXCESS OR SHORTAGE BARRELS	GAS PRODUCTION M.C.F	NO WELLS COMP ABD
SHEEP SPRINGS AREA-54-21	U		8	8	69	2,057		630	
MIDWAY-SUNSET-MIDWAY EAST-SHALLOW	U	1	11	12	157	4,699		769	
POSO CREEK GROUP-PREMIER MAIN AREA	U	1	9	10	54	1,625			
ROUND MT. GROUP-COFFEE CANYON-VEDDER	U		1	1	48	1,440			
ROUND MOUNTAIN-JEWETT	U		7	7	56	1,683			
ROUND MOUNTAIN-VEDDER	U		73	73	1,733	52,005		4,088	
RINCON-MAIN AREA-HOBSON TOMSON-MILEY	U	2	4	6	104	3,123		1,208	
COMPANY TOTAL		74	297	371	4,491	134,731		131,066	
HONOLULU OIL CORPORATION #									
INGLEWOOD-VICKERS	U		11	11	190	5,702		2,240	
RINDGE	U		4	4	132	3,963		3,622	
RUBEL	U		2	2	105	3,157		3,183	
MOYNIER	U		1	1	105	3,162		5,534	
COMPANY TOTAL			18	18	532	15,984		14,579	
HOPE OIL COMPANY									
LONG BEACH-OLD AREA-UPPER POOLS	U		2	2	33	999		822	
HOPKINS, HARRY L.									
HUNTINGTON BEACH-NORTH AREA-ASHTON	U	4	2	6	11	334		512	
HORN, LESTER									
COALINGA-WESTSIDE AREA-TEMBLOR	U	7	3	10	5	150		25	
HORNBROOK, F. H.									
OTHER FIELDS-DEER CREEK	U		1	1		5			
HOSKING BROTHERS									
MIDWAY SUNSET-MIDWAY WEST-UPPER	U		9	9	40	1,199			
HOTZ & NARON OPERATORS									
EDISON-WEST AREA	U								1
HOWARD, O. R., & COMPANY									
HUNTINGTON BEACH-SOUTH OFF-SHORE-MAIN	U		1	1	40	1,198		1,782	
HOWARD, OSCAR R., TRUST									
SANTA FE SPRINGS-OTHERS	U		11	11	161	4,840		3,381	
HOYT & COMPANY-BRONCO LEASE									
MIDWAY SUNSET-MIDWAY EAST-MARICOPA FLAT	U		2	2	1	45			
HOYT & COMPANY-SON LEASE									
MIDWAY SUNSET-MIDWAY EAST-MARICOPA FLAT	U		1	1	2	50			
HOYT, CORAL									
CYMRIC-MCKITTRICK FRONT-LOWER	U	1	2	3	53	1,593			
H. & T. OIL COMPANY									
MIDWAY SUNSET-MIDWAY WEST-UPPER	U		14	14	128	3,839			
HUMBLE OIL & REFINING COMPANY									
EDISON-WEST AREA	U		3	3	23	696		136	

COMPANY FIELD, AREA OR POOL	CLASS	NUMBER OF WELLS: SHUT IN	PRODUCING	TOTAL	CRUDE PRODUCTION: BARRELS DAILY	BARRELS	EXCESS OR SHORTAGE BARRELS	GAS PRODUCTION M.C.F	NO. WELLS COMP ABD.
PLEITO CREEK	U	1	14	15	355	10,643		7,011	
ROSEDALE-STEVENS	S		18	18	1,158	34,738	9,540	66,433	
CASTAIC JUNCTION-10	S		2-						
	S	3	33	34	3,235	97,063	978	55,319	1
15	S		1-						
	S		5	4	567	17,019	681*	43,866	
21	S		1-						
	S	1	4	4	357	10,720	4,720	127,604	
COMPANY TOTAL		5	73	78	5,695	170,879	14,557	300,369	1
HUNTER, HARRY									
HUNTINGTON BEACH-SOUTH ON-SHORE-TAR	U	1		1					
HUNTER, HARRY, & ASSOCIATES									
HUNTINGTON BEACH-SOUTH ON-SHORE-TAR	U		2	2	10	315			
HUNTER, HARRY, & THURMOND, J. P.									
HUNTINGTON BEACH-SOUTH ON-SHORE-TAR	U		1	1	9	260			
HUNTINGTON SIGNAL OIL COMPANY									
HUNTINGTON BEACH-NORTH AREA-ASHTON	U	2	9	11	136	4,068		2,094	
SOUTH ON-SHORE-MAIN	U		2	2	15	447		1,021	
SOUTH OFF-SHORE-MAIN	U		1	1	9	258		256	
COMPANY TOTAL		2	12	14	160	4,773		3,371	
HUNTINGTON STATE COMPANY									
HUNTINGTON BEACH-SOUTH OFF-SHORE-JONES	S		23	23	1,709	51,273	9,273	13,982	
HUNTINGTON SYNDICATE									
HUNTINGTON BEACH-HUNTINGTON AVE-MAIN	S		2	2	88	2,655		2,500	
HUTCHINS, VAUGHN G.									
MIDWAY-SUNSET-MIDWAY EAST-SHALLOW	U	1	8	9	33	991		15	
MIDWAY WEST-UPPER	U		3	3	17	500		9	
COMPANY TOTAL		1	11	12	50	1,491		24	
IMPERIAL OIL COMPANY									
RICHFIELD-EAST AREA	U		2	2	13	385			
YORBA LINDA-SMITH	U	1	2	3	19	583			
COMPANY TOTAL		1	4	5	32	968			
INCA PETROLEUM COMPANY									
EDISON-WEST AREA	U	1		1					
INDIAN OIL COMPANY									
MIDWAY SUNSET-MIDWAY EAST-MARICOPA FLAT	U		3	3	14	430			
MIDWAY WEST-UPPER	U		2	2	10	300			
PLACERITA-OLD AREA	U		8	8	65	1,940			
COMPANY TOTAL			13	13	89	2,670			
INDIAN OIL COMPANY, OPERATOR									
CASTAIC HILLS-STERLING	S		1	1	13	382		859	

COMPANY FIELD, AREA OR POOL	CLASS	NUMBER OF WELLS			CRUDE PRODUCTION		EXCESS OR SHORTAGE BARRELS	GAS PRODUCTION M.C.F	NO WELLS	
		SHUT IN	PRODUCING	TOTAL	BARRELS DAILY	BARRELS			COMP	ABD.
INTER-AMERICAN PETROLEUM COMPANY										
SANTA PAULA GRP-SANTA PAULA CANYON	U		2	2	4	134				
INTERSTATE PETROLEUM CORPORATION										
WILMINGTON-TERMINAL-FB-I-TAR-RGR-TERM	U	1		1						
HARBOR-FBV-RANGER	U		4	4	33	994		521		
COMPANY TOTAL		1	4	5	33	994		521		
INTEX OIL COMPANY										
EDISON-MAIN AREA-FRACTURED SCHIST	U		4	4	55	1,636		170		
WEST AREA	U	1		1						
KERN FRONT	U		7	7	200	5,987		770		
MCDONALD ANTICLINE-LAYMAN AREA	U	1	2	3	6	182				
CYMRIC-WELPORT AREA-SHALLOW	U		4	4	63	1,882				
WELPORT AREA-OCEANIC	U	1	2	3	24	714		489		
WELPORT AREA-WOODY	U		1	1	3	100		1,663		
SALT CREEK WEST AREA-CARNEROS	U	1	1	2	14	435		180		
SALT CREEK WEST AREA-PHACOIDES	U		1	1	42	1,251		90		
SHEEP SPRINGS AREA-54-21	U		9	9	134	4,034		342		
SHEEP SPRINGS AREA-CARNEROS	U		1	1	6	190		237		
SHEEP SPRINGS AREA-PHACOIDES	U		2	2	58	1,743		1,465		
SHEEP SPRINGS AREA-OCEANIC	U		2	2	23	679		2,707	1	
POSO CREEK GROUP-ENAS	U		1	1	5	155				
PREMIER MAIN AREA	U	1	32	33	745	22,343		3,020		
PLACERITA-JUANITA AREA	U	4	19	23	541	16,244				
COMPANY TOTAL		9	88	97	1,919	57,575		11,133	1	
IONE PETROLEUM COMPANY										
NEWPORT WEST-SURF AREA-EAST BLOCK	U	1		1						
IVERS, H. A.										
SESPE CANYON GRP-LITTLE SESPE CREEK	U	2	6	8	27	811		55		
I. X. L. OIL COMPANY, LTD.										
TORRANCE-MAIN	U		2	2	1	35		165		
JACALITOS PETROLEUM COMPANY										
DEVILS DEN-BATES	U		3	3	33	998				
JACKSON, J. M.										
PIRU GROUP-HOLSER CANYON	U		1	1	25	763		300		
JACKSON, J. M., EXPLORATION COMPANY										
WILMINGTON-HARBOR-FBV-RANGER	U		2	2	24	718		510		
JACKSON, M. E.										
LONG BEACH-OLD AREA-UPPER POOLS	U		1	1	19	576		44		
JACKSON, OWEN E.										
LONG BEACH-OLD AREA-UPPER POOLS	U	1		1						

COMPANY FIELD, AREA OR POOL	CLASS	NUMBER OF WELLS: SHUT IN	PRODUCING	TOTAL	CRUDE PRODUCTION: BARRELS DAILY	BARRELS	EXCESS OR SHORTAGE BARRELS	GAS PRODUCTION M.C.F	NO WELLS: COMP	ABD.
JACOBSON, CHARLES R.										
EDISON-MAIN AREA-FRACTURED SCHIST	U		1	1	3	94		9		
MCKITTRICK	U	1	3	4	28	835				1
COMPANY TOTAL		1	4	5	31	929		9		1
JAMES OIL COMPANY, LTD.										
LONG BEACH-OLD AREA-UPPER POOLS	U		1	1	27	812		391		
JANOIL CORPORATION										
PLACERITA-OLD AREA	U		2	2	27	825				
JANSEN & ASSOCIATES										
TAPO CANYON SOUTH-TERRY	S	6	6	12	352	10,559	1,509*			1
JASPERSON & HUNTER OIL PRODUCTION										
TORRANCE-MAIN	U		4	4	18	535				
J. D. R. OIL COMPANY										
LOST HILLS-MAIN	U		10	10	60	1,806				
COHN	U	1		1						
COMPANY TOTAL		1	10	11	60	1,806				
JEM PRODUCTION / SUPPLY CO.										
HUNTINGTON BEACH-SOUTH ON-SHORE-TAR	U	1	2	3	3	88				
JENNINGS AND REESE										
LOST HILLS-WILLIAMSON	U	1	1	2	2	65				
MIDWAY SUNSET-MIDWAY WEST-UPPER	U		2	2	12	368				
COMPANY TOTAL		1	3	4	14	433				
JERRY-LEE OIL COMPANY										
KERN RIVER	U		6	6	52	1,563				
JET OIL COMPANY										
LONG BEACH-OLD AREA-UPPER POOLS	U		1	1	8	226		1,396		
J. I. M. PETROLEUM COMPANY										
TORRANCE-MAIN	U		2	2	4	116				
WILMINGTON-HARBOR-FB-IV-TERMINAL U&L	U		1	1	12	352				
COMPANY TOTAL			3	3	16	468				
JIMSCO OIL COMPANY										
RICHFIELD-EAST AREA	U		1	1	14	419		105		
JOHNSTON, A. S., DRILLING CORPORATION										
LONG BEACH-OLD AREA-UPPER POOLS	U		17	17	203	6,086		4,674		
NORTHWEST EXTENSION AREA	U	1		1						
TORRANCE-MAIN	U		8	8	55	1,645		500		
COMPANY TOTAL		1	25	26	258	7,731		5,174		
JOHNSTON, G. S. & H. E.										
HUNTINGTON BEACH-SOUTH ON-SHORE-TAR	U		1	1	6	193		2		

COMPANY FIELD, AREA OR POOL	CLASS	NUMBER OF WELLS			CRUDE PRODUCTION		EXCESS OR SHORTAGE BARRELS	GAS PRODUCTION M.C.F	NO. WELLS
		SHUT IN	PRODUCING	TOTAL	BARRELS DAILY	BARRELS			COMP ABD.
JOLLEY, INA BELLE									
RICHFIELD-EAST AREA	U		1	1	2	50			
JONES, JOHN PAUL									
HUNTINGTON BEACH-HUNTINGTON AVE-JONES	S		1	1	39	1,168	66	1,100	1
JONES, TED, DRILLING COMPANY									
LONG BEACH-OLD AREA-UPPER POOLS	U	1		1					
JOURNIGAN, LEONARD E.									
LONG BEACH-OLD AREA-UPPER POOLS	U		1	1	1	30		72	
J. V. A. OIL COMPANY									
HUNTINGTON BEACH-SOUTH ON-SHORE-TAR	U		1	1	14	412			
KADANE, G. E., & SONS									
MIDWAY-SUNSET-MIDWAY EAST-SHALLOW	U	1	7	8	50	1,504			
NEWPORT WEST-MAIN AREA	U	14	94	108	1,257	37,702			
COMPANY TOTAL		15	101	116	1,307	39,206			
KAHLER, M. V.									
MORALES CANYON-CLAYTON	U	1	9	10	54	1,620			
KALPURE OIL COMPANY									
EDISON-WEST AREA	U		1	1	19	571		200	
KAREN, MINNIE, MRS.									
TORRANCE-MAIN	U		1	1	7	216			
WILMINGTON-TOWN LOT-TAR-RANGER-TERMINAL	U		1	1	14	408			
COMPANY TOTAL			2	2	21	624			
KAY OIL COMPANY									
ROSECRANS-ATHENS AREA-LOWER	U		2	2	21	632		929	
KELLEY, FRANKLIN C.									
TORRANCE-MAIN	U		2	2	21	631		461	
DEL AMO	U		1	1	4	120		102	
COMPANY TOTAL			3	3	25	751		563	
KELLEY, GUY A.									
TORRANCE-DEL AMO	U		1	1	1	44		38	
KELLEY & KELLEY									
TORRANCE-MAIN	U		1	1	3	80		62	
KELLY, L. C. AND KELLY, M. V.									
LONG BEACH-OLD AREA-UPPER POOLS	U		3	3	15	460		1,119	
PLAYA DEL REY-VENICE AREA	U		4	4	14	413		248	
ROSECRANS-SOUTH AREA-O DEA	U		4	4	124	3,719		2,508	
SOUTH AREA-8TH	U		1	1				596	
COMPANY TOTAL			12	12	153	4,592		4,471	
KELLY & MARCOUX									
LONG BEACH-OLD AREA-UPPER POOLS	U		3	3	47	1,404		655	

COMPANY FIELD, AREA OR POOL	CLASS	NUMBER OF WELLS: SHUT IN	PRODUCING	TOTAL	CRUDE PRODUCTION: BARRELS DAILY	BARRELS	EXCESS OR SHORTAGE BARRELS	GAS PRODUCTION M.C.F	NO. WELLS: COMP	ABD.
KENMAC OIL COMPANY										
DEVILS DEN-BATES	U		1	1	20	612				
KENNEY, E. B.										
TORRANCE-MAIN	U	1	1	2	4	132				
KERN COUNTY LAND COMPANY										
COLES LEVEE SOUTH-STEVENS F-2 CRUDE OIL	S		1	1	25	736		368		
GREELEY-STEVENS	U		2	2	84	2,532		2,390		
COMPANY TOTAL			3	3	109	3,268		2,758		
KERN DRILLING CORPORATION										
SANTA MARIA VALLEY-MAIN	U		3	3	26	782		1,509		
KERN OIL COMPANY LIMITED										
BELRIDGE SOUTH	U	1	38	39	220	6,601				
BUENA VISTA-BVH-ANTELOPE SHALE-E. DOME	S		5	5	325	9,749	1,141*	9,406		
BUENA VISTA HILLS-OTHERS	U	8	10	18	32	970		1,861		
EDISON-EDISON GROVES AREA-D-L-K	U	1	11	12	119	3,585				2
RACE TRACK HILL-JEWETT	S		5	5	117	3,515		4,081		
RACE TRACK HILL-PYRAMID HILL	S	2	8	10	157	4,715		33,470		
RACE TRACK HILL-VEDDER	S	1	4	5	38	1,151		9,571		
KERN FRONT	U	12	50	62	555	16,650				
KERN RIVER	U	39	323	362	1,356	40,695				
MONTEBELLO-MAIN AREA-BALDWIN 1-2-3	U	3	18	21	211	6,319		12,469		
WEST AREA	U	6	24	30	378	11,339		30,130		
COMPANY TOTAL		73	496	569	3,508	105,289	1,141*	100,988	2	
KERN PETROLEUM CORPORATION										
TORRANCE-DEL AMO	U	1	1	2	6	177		436		
KESSON-SNYDER COMPANY										
TORRANCE-MAIN	U	1	2	3	18	530		550		
KEYSTONE CONSOLIDATED OIL COMPANY										
TORRANCE-MAIN	U	1	4	5	23	683				
K. G. S. OIL COMPANY										
WILMINGTON-TERMINAL-FB-I-TAR-RGR-TERM	U		1	1	14	424		310		
TOWN LOT-TAR-RANGER-TERMINAL	U	1	2	3	53	1,587		1,159		
COMPANY TOTAL		1	3	4	67	2,011		1,469		
KIDSON, WINIFRED A.										
PLACERITA-OLD AREA	U	1		1						
KIESAU, R. M., MRS., & KIESAU ESTATE, THE										
HUNTINGTON BEACH-NORTH AREA-ASHTON	U		1	1	6	186		299		
KILLINGSWORTH, C. C., OPERATOR										
HUNTINGTON BEACH-SOUTH ON-SHORE-TAR	U	2	3	5	20	591		153		
COMPANY TOTAL		2	3	5	20	591		153		

COMPANY FIELD, AREA OR POOL	CLASS	NUMBER OF WELLS			CRUDE PRODUCTION		EXCESS OR SHORTAGE BARRELS	GAS PRODUCTION M.C.F	NO. WELLS	
		SHUT IN	PRODUCING	TOTAL	BARRELS DAILY	BARRELS			COMP	ABD.
KILLINGSWORTH, H. W. & W. MELVIN										
TORRANCE-DEL AMO	U		1	1	9	283		176		
KILLINGSWORTH & SMITH, OPERATORS										
BELRIDGE SOUTH	U		3	3	39	1,182				
KILLINGSWORTH, W. M.										
TORRANCE-TAR-RANGER	U		1	1	5	155				
MAIN	U	2	5	7	32	964		402		
DEL AMO	U	1	2	3	9	280				
WILMINGTON-TOWN LOT-TAR-RANGER-TERMINAL	U		1	1	17	506				
COMPANY TOTAL		3	9	12	63	1,905		402		
KIMCO OIL CO.										
LONG BEACH-OLD AREA-UPPER POOLS	U		1	1	13	396		365		
NORTHWEST EXTENSION AREA	U		1	1	19	585		331		
COMPANY TOTAL			2	2	32	981		696		
KING PETROLEUM COMPANY										
FRUITVALE-MARTIN-KERNCO	U	3	1	4	264	7,932		550		
KIRK & ASSOCIATES										
WILMINGTON-TOWN LOT-TAR-RANGER-TERMINAL	U		1	1	7	220		240		
KLASSMAN, HARRY, OPERATOR										
HUNTINGTON BEACH-HUNTINGTON AVE-JONES	S		1	1	40	1,200	794			1
KLINE, HARRY & VIVEAN										
OTHER FIELDS-NORTH WHITTIER HEIGHTS	U	1	2	3	6	182				
KNAPP BROTHERS										
CANOGA PARK	U		1	1	1	18				
KOSANKE, J. F.										
OTHER FIELDS-CHICO-MARTINEZ	U	5		5						
KOVALESKI-ZILLGITT										
TEJON GROUP-COMANCHE POINT	U	1		1						
KRAEMER, LAWRENCE P.										
YORBA LINDA-SMITH	U		1	1	16	491				
KRAEMER OIL ESTATE										
RICHFIELD-WEST AREA	U		1	1	13	392		196		
OTHER FIELDS-KRAEMER	U	4	20	24	232	6,961		4,385		
COMPANY TOTAL		4	21	25	245	7,353		4,581		
KRIEGER, W. G., CO.										
CAT CANYON WEST-LOS FLORES	S		5	5	122	3,670	343	1,500		
KUBETZ, SAM										
OTHER FIELDS-NORTH WHITTIER HEIGHTS	U		1	1	2	60				
LA BREA OIL COMPANY										
HUNTINGTON BEACH-NORTH AREA-TAR BOLSA	U		2	2	11	323		60		

COMPANY FIELD, AREA OR POOL	CLASS	NUMBER OF WELLS: SHUT IN	NUMBER OF WELLS: PRODUCING	NUMBER OF WELLS: TOTAL	CRUDE PRODUCTION: BARRELS DAILY	CRUDE PRODUCTION: BARRELS	EXCESS OR SHORTAGE BARRELS	GAS PRODUCTION M.C.F	NO. WELLS COMP ABD.
LACAL OIL COMPANY, LTD.									
LONG BEACH-OLD AREA-UPPER POOLS	U		2	2	20	587		185	
LACK, LESLIE L.									
WHITTIER-CENTRAL AREA-MAIN	U	1		1					
LAKEPORT PETROLEUM COMPANY									
COALINGA-WESTSIDE AREA-TEMBLOR	U		4	4	22	650		4	
LAKE OIL COMPANY									
TEJON GRAPEVINE-CENTRAL AREA-OLCESE	S		2	2	313	9,384	2,874	17,500	
LAKERN OIL COMPANY									
OTHER FIELDS-JASMIN	U	1		1					
LARSON, IVAR									
WILMINGTON-HARBOR-FB-IVD-UP-FORD-237	S		1	1	8	239		192	
LA SUNA OIL COMPANY									
ROUND MT. GROUP-ROUND MOUNTAIN-VEDDER	U		2	2	21	621			
LA TIERRA OIL COMPANY									
COALINGA-WESTSIDE AREA-TEMBLOR	U	5	18	23	5	139			
LAWRENCE, T. R.									
HUNTINGTON BEACH-HUNTINGTON AVE-JONES	S		1	1	81	2,423	23	3,004	
LAWTON & HANNAMAN									
KERN RIVER	U	1	18	19	106	3,195			
LEBOW-HARBOR OIL COMPANY									
TORRANCE-MAIN	U	1	3	4	39	1,173		1,185	
LEBOW OIL COMPANY									
FRUITVALE-MARTIN-KERNCO	U		25	25	269	8,072		5,369	
TORRANCE-MAIN	U		4	4	14	420		12	
COMPANY TOTAL			29	29	283	8,492		5,381	
LEBOW-MCNEE & RUBIN									
HUNTINGTON BEACH-SOUTH ON-SHORE-TAR	U	1	1	2	1	44			
LEBOW-RADIN									
FRESNO GROUP-CAMDEN	U		3	3	30	915		15	
LEE DRILLING COMPANY									
WILMINGTON-HARBOR-FB-IV-RANGER	U		1	1	10	300			
LEIGH, DON A.									
HUNTINGTON BEACH-SOUTH ON-SHORE-MAIN	U		1	1	2	65		109	
LEIGH, M. C., OIL COMPANY									
HUNTINGTON BEACH-SOUTH ON-SHORE-MAIN	U	1		1					
LEMOHN, BERNARD									
TORRANCE-MAIN	U		1	1	5	150			
LESHER OIL COMPANY UNIT NO. 2									
FRUITVALE-MARTIN-KERNCO	U								

COMPANY FIELD, AREA OR POOL	CLASS	NUMBER OF WELLS: SHUT IN	PRODUCING	TOTAL	CRUDE PRODUCTION: BARRELS DAILY	BARRELS	EXCESS OR SHORTAGE BARRELS	GAS PRODUCTION M.C.F	NO WELLS: COMP	ABD
LESPRING OIL COMPANY										
TORRANCE-MAIN	U	1	1	2	4	125		115		
DEL AMO	U		3	3	14	430		411		
COMPANY TOTAL		1	4	5	18	555		526		
LINCOLN PETROLEUM CO										
WILMINGTON-TOWN LOT-TAR-RANGER-TERMINAL	U		6	6	217	6,512		1,976		
LINDOW, HOWARD W.										
RICHFIELD-EAST AREA	U	2	2	4	9	266		309		
LIT OIL CO.										
HUNTINGTON BEACH-NORTH AREA-ASHTON	U		2	2	5	162		100		
LLOYD CORPORATION, LTD.										
PALOMA-MAIN AREA-PALOMA CRUDE OIL	S		3	3	149	4,484	500	14,456		
OXNARD-MCINNIS	U		1	1	27	809		622	1	
LIVINGSTON	S		4	4	404	12,121	59*	15,802	1	
VENTURA-D-3	U	1	4	5	228	6,831		4,680		
D-4	U	2	1	3	14	422		2,082		
D-5,6 EAST	S	3	37	40	2,765	82,956	564	239,876		
D-7 D-8	S		18	18	1,372	41,151		44,165		
COMPANY TOTAL		6	68	74	4,959	148,774	1,005	321,683	2	
LLOYD CORPORATION, LTD. #										
VENTURA-D-5,6 EAST	S				13	397		1,917		
D-7 D-8	S		1	1	119	3,584		2,778		
COMPANY TOTAL			1	1	132	3,981		4,695		
L. M. S. OIL COMPANY										
TORRANCE-MAIN	U		3	3	22	662		252		
DEL AMO	U		1	1	5	160		110		
COMPANY TOTAL			4	4	27	822		362		
LOCKHART OIL & GAS COMPANY										
WILMINGTON-TOWN LOT-TAR-RANGER-TERMINAL	U		3	3	23	705				
LOHMAN, LEWIS T., OPERATOR										
VENTURA-D-5,6 NORTH	S		1	1	39	1,156	886	1,991		
LOMA OPERATING COMPANY										
LONG BEACH-OLD AREA-UPPER POOLS	U	1	4	5	28	838		290		
TORRANCE-DEL AMO	U		1	1	8	252		139		
WILMINGTON-TOWN LOT-FORD	U		1	1	19	580		374		
COMPANY TOTAL		1	6	7	55	1,670		803		
LONG BEACH, CITY OF										
WILMINGTON-HARBOR-FBV-RANGER	U		1	1	4	108		256		
LONG BEACH, CITY OF, HARBOR DEPARTMENT										
LONG BEACH OIL DEVELOP. CO., CONTRACTOR										
WILMINGTON-TERMINAL-FB-I-TAR-RGR-TERM	U		9	9	214	6,423		3,352		

COMPANY	FIELD, AREA OR POOL	CLASS	NUMBER OF WELLS: SHUT IN	PRODUCING	TOTAL	CRUDE PRODUCTION: BARRELS DAILY	BARRELS	EXCESS OR SHORTAGE BARRELS	GAS PRODUCTION M.C.F	NO. WELLS COMP ABD.
	TERMINAL-FB-I-FORD	U	1		1					
	TERMINAL-FB-II-TAR RANGER	U	3	24	27	977	29,311		14,285	
	TERMINAL-FB-II-UP	U		2	2	33	991		2,415	
	TERMINAL-FB-II-FORD	U	1	2	3	74	2,230		3,550	
	TERMINAL-FB-IIA-TERMINAL U&L	S	3	12	15	1,003	30,086	651	37,727	
	TERMINAL-FB-III-TAR RANGER	S	6	37	43	1,719	51,583		25,257	
	TERMINAL-FB-III-UPPER TERMINALS	S		12	12	762	22,866	3,634	9,614	
	TERMINAL-FB-III-LOWER TERMINALS	S		1	1	18	547	3,293*	852	
	HARBOR-FB-IV-TAR	U		34	34	1,584	47,520		20,309	
	HARBOR-FB-IV-RANGER	U	1	64	65	2,717	81,503		52,901	
	HARBOR-FB-IV-TERMINAL U&L	U	4	99	103	4,218	126,541		62,715	
	HARBOR-FB-IV-UP	U		6	6	214	6,413		17,705	
	HARBOR-FB-IVA-237	U		1	1	10	288		2,126	
	HARBOR-FB-IVB-237	U		23	23	527	15,815		25,191	
	HARBOR-FB-IVAB-FORD	U		5	5	79	2,371		7,973	
	HARBOR-FB-IVD-UP-FORD-237	S	5	54	59	1,162	34,866		59,708	
	HARBOR-FBV-TAR	S		74	74	4,246	127,383	3,662	136,914	
	HARBOR-FBV-RANGER	U		115	115	4,578	137,335		124,724	
	HARBOR-FB-VA-TERMINAL U&L	U		11	11	476	14,293		12,518	
	HARBOR-FBVA-UP	U		4	4	235	7,052		9,693	
	HARBOR-FBVA-FORD	U		5	5	372	11,157		16,792	
	HARBOR-FB-VB-UPPER TERMINAL	S	12	76	88	5,286	158,576	8,139	136,915	
	HARBOR-FB-VB-LOWER TERMINAL	S	4	29	33	2,882	86,449	14,723	149,285	
	HARBOR-FB-VB-UP	S		9	9	740	22,214	3,513*	26,642	
	HARBOR-FB-VB-FORD	U		8	8	420	12,596		18,083	
	HARBOR-FB-VI-LOWER TERMINAL	S		2	2	300	9,000		15,106	
	HARBOR-FB-VI-FORD	S		3	3	354	10,613	2,633	10,683	
	HARBOR-FB-VI-UP	S		2	2	348	10,443	2,943	4,683	
	COMPANY TOTAL		40	723	763	35,548	1066,467	29,579	1007,718	
LONG BEACH, CITY OF, HARBOR DEPARTMENT RICHFIELD OIL CORPORATION, CONTRACTOR										
	WILMINGTON-HARBOR-FBV-TAR	S	1	18	19	690	20,705	216	37,983	
	HARBOR-FBV-RANGER	U		19	19	512	15,348		28,723	
	HARBOR-FB-VB-UPPER TERMINAL	S	2	15	17	1,237	37,113	3,398	98,509	
	HARBOR-FB-VB-LOWER TERMINAL	S		8	8	888	26,636	4,722	27,345	
	HARBOR-FB-VB-UP	S		1	1	19	565	785*	30	
	HARBOR-FB-VI-RANGER	U	1	17	18	681	20,435		29,539	
	HARBOR-FB-VI-UPPER TERMINAL	S	3	32	35	4,385	131,548	12,965	178,258	1
	HARBOR-FB-VI-LOWER TERMINAL	S	1	19	20	2,654	79,627		53,589	

COMPANY FIELD, AREA OR POOL	CLASS	NUMBER OF WELLS			CRUDE PRODUCTION		EXCESS OR SHORTAGE BARRELS	GAS PRODUCTION M.C.F	NO WELLS COMP ABD.
		SHUT IN	PRODUCING	TOTAL	BARRELS DAILY	BARRELS			
HARBOR-FB-VI-FORD	S		6	6	409	12,257	214	13,560	
HARBOR-FB-VI-UP	S		3	3	373	11,182	494*	5,625	1
COMPANY TOTAL		8	138	146	11,848	355,416	20,236	473,161	2
LOPIN, NICK & MARTIN & BEVER, FRED									
TORRANCE-MAIN	U		1	1	9	274			
LOPP & BEVER									
TORRANCE-MAIN	U		1	1	11	334		557	
LOS FELIZ INVESTMENT COMPANY-G. E. KADANE & SONS									
SOUTH MOUNTAIN-SESPE	U		2	2	18	552		555	
LOS NIETOS COMPANY									
KETTLEMAN NORTH DOME-TEMBLOR	S		1	1	53	1,601		49,392	
VAQUEROS	S		2	2	23	696		8,235	
EOCENE	U		1	1	37	1,097		228,668	
MOUNT POSO GROUP-DORSEY-VEDDER	U		8	8	68	2,029			
MOUNT POSO-VEDDER	U	2	15	17	86	2,570			
ROUND MT. GROUP-COFFEE CANYON-VEDDER	U		7	7	55	1,644			
SHIELLS CANYON-SESPE	U	1	8	9	27	807		1,264	
WEST MOUNTAIN-SESPE	U	3	19	22	319	9,567		7,865	
COMPANY TOTAL		6	61	67	668	20,011		295,424	
LOS NIETOS COMPANY, OPERATOR									
GUIJARRAL HILLS-ALLISON	U	3	5	8	126	3,779		12,754	
LEDA	S	1	3	4	11	334		7,871	
LEDA NORTH	S		3	3	279	8,376	2,104	30,657	
BOURDIEU	S		3	3	1,754	52,607	31,607	40,494	2
PLEASANT VALLEY-EOCENE	S	1	4	5	564	16,924	1,785	6,435	
SOUTH MOUNTAIN-SESPE	U		16	16	622	18,665		10,683	
COMPANY TOTAL		5	34	39	3,356	100,685	35,496	108,894	2
LOUDEN, A. J.									
TORRANCE-DEL AMO	U		2	2	4	130		185	
LOVELADY SUPPLY COMPANY									
LONG BEACH-OLD AREA-UPPER POOLS	U		1	1	13	382		113	
L & S OIL CO.									
WELCOME VALLEY	U	2	4	6	9	278			
LUCAS, ANDREW									
OXNARD-MIOCENE	U		2	2	84	2,522		20	
LUCAS, D. D.									
KERN RIVER	U		58	58	84	2,512			
LUCIAN, JOHN A.									
EDISON-EDISON GROVES AREA-D-L-K	U		1	1	9	270			

COMPANY FIELD, AREA OR POOL	CLASS	NUMBER OF WELLS: SHUT IN	PRODUCING	TOTAL	CRUDE PRODUCTION: BARRELS DAILY	BARRELS	EXCESS OR SHORTAGE BARRELS	GAS PRODUCTION M.C.F	NO. WELLS: COMP	ABD.
LUCK OIL COMPANY										
TORRANCE-MAIN	U		2	2	25	757		630		
LUCKY FIVE OIL COMPANY, THE										
KERN RIVER	U		5	5	23	698				
LUCKY STRIKE OIL COMPANY, LTD.										
HUNTINGTON BEACH-NORTH AREA-TAR BOLSA	U		1	1	4	109		413		
NORTH AREA-ASHTON	U	2	4	6	37	1,104		995		
COMPANY TOTAL		2	5	7	41	1,213		1,408		
L. W. S. CO.										
SOUTH MOUNTAIN-SESPE	U		1	1	10	289		93		
LYTLE, ROBERT S., OPERATOR										
MOORPARK	U		1	1	7	211		215	1	
MACDONALD, A. M.										
MCKITTRICK	U	1	2	3	5	150				
MACDONALD & BURNS										
TORRANCE-MAIN	U		3	3	33	989		528		1
DEL AMO	U	1	5	6	67	2,007		1,152		1
WILMINGTON-TOWN LOT-TAR-RANGER-TERMINAL	U		2	2	81	2,433		690		
COMPANY TOTAL		1	10	11	181	5,429		2,370		2
MACK OIL COMPANY										
LONG BEACH-OLD AREA-UPPER POOLS	U		1	1	1	30		70		
MACMILLAN PETROLEUM CORPORATION										
EDISON-WEST AREA	U	2	13	15	194	5,823				
MACRATE OIL COMPANY										
EDISON-WEST AREA	U		1	1	6	190				
FRUITVALE-MARTIN-KERNCO	U	1	6	7	63	1,886				
HUNTINGTON BEACH-SOUTH ON-SHORE-MAIN	U		1	1	8	250		2		
LONG BEACH-OLD AREA-UPPER POOLS	U		10	10	111	3,325		1,646		
ROSECRANS-MAIN AREA-O DEA	U		1	1	10	310		436		
COMPANY TOTAL		1	19	20	198	5,961		2,084		
MACRATE OIL COMPANY & DUMM BROS. PETROLEUM CORPORATION										
EDISON-WEST AREA	U		3	3	55	1,643				
RACE TRACK-PORTALS BERRY & CHANAC	U	1		1						
FRUITVALE-MARTIN-KERNCO	U	1		1						
COMPANY TOTAL		2	3	5	55	1,643				
MACSON OIL COMPANY										
EDISON-WEST AREA	U		26	26	396	11,888		310		
SIMI-SESPE-EOCENE	U	1	2	3	2	70				

COMPANY FIELD, AREA OR POOL	CLASS	NUMBER OF WELLS			CRUDE PRODUCTION		EXCESS OR SHORTAGE BARRELS	GAS PRODUCTION M.C.F	NO. WELLS COMP. AND
		SHUT IN	PRODUCING	TOTAL	BARRELS DAILY	BARRELS			
SANTA MARIA VALLEY-MAIN	U		4	4	61	1,824		2,989	
COMPANY TOTAL		1	32	33	459	13,782		3,299	
MAGEE, HARRY H., OPERATOR									
EDISON-MAIN AREA-UPPER	U	1	6	7	116	3,494			
MAIN AREA-FRACTURED SCHIST	U		17	17	487	14,623			
CYMRIC-WELPORT AREA-SHALLOW	U		4	4	6	189			
MOUNT POSO GROUP-DORSEY-VEDDER	U		6	6	55	1,640			
COMPANY TOTAL		1	33	34	664	19,946			
MAGNOLIA OIL COMPANY									
BELGIAN ANTICLINE-SOUTHEAST-PHACOIDES	S		1	1	8	250			
MALLON, FELIX									
LONG BEACH-OLD AREA-UPPER POOLS	U		2	2	14	417		557	
MANEY, E. W.									
SANTA BARBARA-VAQUEROS	U	1	1	2	6	170			
MANLEY & MCGINN									
MIDWAY SUNSET-MIDWAY WEST-UPPER	U	4	28	32	299	8,978		1,400	
MARBLE PETROLEUM CORPORATION									
TORRANCE-MAIN	U	2	1	3	9	270			
MARCELL, DOUGLAS, OPERATOR									
TORRANCE-MAIN	U		2	2	35	1,038		1,309	
MARCO OIL COMPANY									
KERN RIVER	U	2	31	33	88	2,630			
MARILYN OIL COMPANY									
HUNTINGTON BEACH-SOUTH ON-SHORE-TAR	U		1	1	15	452			
SOUTH ON-SHORE-MAIN	U		1	1	15	455		50	
COMPANY TOTAL			2	2	30	907		50	
MARION, J. H.									
HUNTINGTON BEACH-NORTH AREA-ASHTON	U		5	5	48	1,451		787	
SOUTH ON-SHORE-MAIN	U		1	1	11	345		546	
SOUTH OFF-SHORE-MAIN	U		2	2	59	1,760		1,250	
COMPANY TOTAL			8	8	118	3,556		2,583	
MARION, JOHN H.									
ROSECRANS-MAIN AREA-O DEA	U		2	2	41	1,223		348	
MARKEL OIL COMPANY									
COALINGA-WESTSIDE AREA-TEMBLOR	U		2	2	24	712			
MARKHAM, EDGAR L.									
LONG BEACH-OLD AREA-UPPER POOLS	U		2	2	11	338		163	
MAR RICO OIL COMPANY									
HUNTINGTON BEACH-SOUTH OFF-SHORE-MAIN	U		1	1	74	2,211		524	

COMPANY FIELD, AREA OR POOL	CLASS	NUMBER OF WELLS: SHUT IN	NUMBER OF WELLS: PRODUCING	NUMBER OF WELLS: TOTAL	CRUDE PRODUCTION: BARRELS DAILY	CRUDE PRODUCTION: BARRELS	EXCESS OR SHORTAGE BARRELS	GAS PRODUCTION M.C.F	NO. WELLS COMP ABD.
MARR, M. H.									
SIMI-SESPE-EOCENE	U		16	16	21	628		100	
MARVIC ASSOCIATES, LTD.									
MIDWAY SUNSET-MIDWAY WEST-UPPER	U		6	6	40	1,197			
MARVIEW OIL COMPANY									
HUNTINGTON BEACH-NORTH AREA-ASHTON	U		1	1	28	826		581	
MAR VISTA OIL COMPANY									
TORRANCE-MAIN									
MARYA OIL COMPANY									
LONG BEACH-OLD AREA-UPPER POOLS	U		1	1	3	91		207	
MASCOT OIL COMPANY									
MIDWAY SUNSET-MIDWAY WEST-UPPER	U	2	49	51	351	10,538			
MASSEY & ASSOCIATES									
LONG BEACH-OLD AREA-UPPER POOLS	U		2	2	48	1,431		682	
MATHIS, E. H.									
HUNTINGTON BEACH-SOUTH ON-SHORE-MAIN	U		2	2	10	300		106	
MAYFIELD OIL COMPANY									
COYOTE EAST-HUALDE	U	1	3	4	15	436			
ANAHEIM	U	1	11	12	42	1,263			
MIOCENE A	U		2	2	1	26			
COMPANY TOTAL		2	16	18	58	1,725			
MAYO & FOURL									
LONG BEACH-OLD AREA-UPPER POOLS	U	1	4	5	53	1,579		527	
MAYO, L. T.									
LONG BEACH-OLD AREA-UPPER POOLS	U		6	6	50	1,515		706	
M. B. H. DRILLING COMPANY									
LONG BEACH-OLD AREA-UPPER POOLS	U		1	1	7	200		217	
M & B OIL COMPANY									
TORRANCE-MAIN									
DEL AMO	U		1	1	3	100		33	
COMPANY TOTAL	U		1	1	1	30		11	
			2	2	4	130		44	
M. B. S. OIL COMPANY									
MIDWAY SUNSET-MIDWAY WEST-UPPER	U	2	4	6	23	705			
M. & C. OIL COMPANY									
PLACERITA-OLD AREA	U		4	4	44	1,309			
MCALESTER CALIFORNIA OIL COMPANY									
UNION OIL COMPANY, OPERATOR									
DEL VALLE-EAST AREA-SHERMAN	S	1	6	7	141	4,224		14,958	
EAST AREA-DEL VALLE	S		16	16	839	25,176	1,476	80,520	1

COMPANY FIELD, AREA OR POOL	CLASS	NUMBER OF WELLS			CRUDE PRODUCTION		EXCESS OR SHORTAGE BARRELS	GAS PRODUCTION M.C.F	NO. WELLS COMP. ABD.
		SHUT IN	PRODUCING	TOTAL	BARRELS DAILY	BARRELS			
EAST AREA-DL4-DL5	U		1	1	7	207		3,766	
EAST AREA-BERING	S		7	7	276	8,279	29	28,313	
EAST AREA-LINCOLN	S		3	3	208	6,250	2,750*	41,998	
WEST AREA-P-60	S		1	1	99	2,980	1,520*	7,374	
WEST AREA-VASQUEZ 13	S		3	3	147	4,401	2,292*	13,146	
WEST AREA-VASQUEZ-VIDEGAIN	S		1	1	19	572		2,387	
WEST AREA-VASQUEZ 14	S		1	1	46	1,385		2,901	
COMPANY TOTAL		1	39	40	1,782	53,474	5,057*	195,363	1
MCBO OIL COMPANY									
COALINGA-WESTSIDE AREA-TEMBLOR	U	1	5	6	14	425		10	
EDISON RACE TRACK-PORTALS-BERRY&CHANAC	U		3	3	7	197			
RACE TRACK HILL-PYRAMID HILL	S	1		1					
LONG BEACH-OLD AREA-UPPER POOLS	U	2	6	8	51	1,543		946	
OLD AREA-DE SOTO SOUTH FLANK	U		1	1	10	307		395	
COMPANY TOTAL		4	15	19	82	2,472		1,351	
MCBRIDE, J. W.									
TORRANCE-MAIN									
DEL AMO	U	1		1					
WILMINGTON-TOWN LOT-TAR-RANGER-TERMINAL	U	1		1					
COMPANY TOTAL		2		2					
MCCALLEN, M. M.									
HUNTINGTON BEACH-SOUTH ON-SHORE-MAIN	U		1	1	8	247		475	
MCCALLEN-MONTEBELLO COMPANY									
MONTEBELLO-WEST AREA	U	1	3	4	37	1,116		2,445	
MCCARTHY, GEORGE H., OPERATOR									
ROSECRANS-SOUTH AREA-ZINS	U		1	1	4	119		721	
MCCASLIN, W. E.									
SEAL BEACH-ALAMITOS AREA	U	2		2					
MCCUE, JAMES H.									
PLACERITA-JUANITA AREA	U	1		1					
MCCULLOUGH, I. J.									
ROSECRANS-ATHENS AREA-O DEA	U		1	1	2	47			
MCDONALD, DAN									
OTHER FIELDS-VALLECITOS	U		1	1	1	42			
MCDONALD, JOSEPH, OIL COMPANY									
MIDWAY SUNSET-MIDWAY WEST-UPPER	U	1	20	21	164	4,908		80	
MCFADDIN & LAKE									
TEJON HILLS-S	U	1	2	3	4	134			
MCGOWEN, ROBERT L.									
TORRANCE-TAR-RANGER	U		1	1	7	207		257	

COMPANY FIELD, AREA OR POOL	CLASS	NUMBER OF WELLS SHUT IN	PRODUCING	TOTAL	CRUDE PRODUCTION BARRELS DAILY	BARRELS	EXCESS OR SHORTAGE BARRELS	GAS PRODUCTION M.C.F	NO. WELLS COMP. ABD.
MCGOWEN, ROBERT L.									
TORRANCE-TAR-RANGER	U		1	1	7	207		257	

COMPANY FIELD, AREA OR POOL	CLASS	NUMBER OF WELLS SHUT IN	PRODUCING	TOTAL	CRUDE PRODUCTION BARRELS DAILY	BARRELS	EXCESS OR SHORTAGE BARRELS	GAS PRODUCTION M.C.F	NO. WELLS COMP. ABD.
MAIN	U		1	1	7	206		29	
COMPANY TOTAL			2	2	14	413		286	
MCGRATH, WARREN F., ESTATE OF									
SEAL BEACH-ALAMITOS AREA	U		1	1	9	270			
SOUTH BLOCK-MCGRATH	U	2		2					
COMPANY TOTAL		2	1	3	9	270			
MCGREEVEY & NEARY									
EDISON-WEST AREA	U	1		1					
MCGREEVY-NEARY OIL CO.									
OTHER FIELDS-DEER CREEK	U		6	6	129	3,859			
MCGREGHAR LAND COMPANY									
KERN RIVER	U		9	9	38	1,140			
MCGUCKIN & BENNIGSDORF OIL COMPANY									
HUNTINGTON BEACH-NORTH AREA-ASHTON	U		1	1	4	132			
MCKENZIE, PAUL F.									
LONG BEACH-OLD AREA-UPPER POOLS	U	1	1	2	12	348		157	
AIRPORT AREA	S		1	1	114	3,410	1,760	3,163	
COMPANY TOTAL		1	2	3	126	3,758	1,760	3,320	
MCLENNAN, ETHEL									
MCKITTRICK	U	1	8	9	53	1,600		100	
MIDWAY-SUNSET-MIDWAY EAST-SHALLOW	U		7	7	38	1,130		839	
COMPANY TOTAL		1	15	16	91	2,730		939	
MCMANUS OIL COMPANY									
KERN RIVER	U	1	44	45	52	1,572		162	
MCMULLAN OIL COMPANY									
FRUITVALE-MARTIN-KERNCO	U		1	1	4	120			
KERN RIVER	U		4	4	20	610			
COMPANY TOTAL			5	5	24	730			
MCNEE OIL COMPANY									
TORRANCE-MAIN	U	1	18	19	157	4,712		441	
MCNEILL, JAMES M., OPERATOR									
TORRANCE-MAIN	U	1	10	11	123	3,696		1,153	
MCPHERRIN, W. S., & BAILEY, T. F.									
LONG BEACH-OLD AREA-UPPER POOLS	U		1	1	1	30		45	
MCR INVESTMENT COMPANY									
FRUITVALE-MARTIN-KERNCO	U		1	1	4	120			
MCVICAR-ROOD									
HUNTINGTON BEACH-SOUTH OFF-SHORE-MAIN	U		6	6	251	7,530		5,117	
MCVICAR AND ROOD									
HUNTINGTON BEACH-SOUTH OFF-SHORE-MAIN	U		4	4	75	2,247		1,611	

65499 O—55——19

COMPANY FIELD, AREA OR POOL	CLASS	NUMBER OF WELLS			CRUDE PRODUCTION		EXCESS OR SHORTAGE BARRELS	GAS PRODUCTION M.C.F	NO. WELLS	
		SHUT IN	PRODUCING	TOTAL	BARRELS DAILY	BARRELS			COMP	ABD.
MCVICAR-ROOD-MARION										
HUNTINGTON BEACH-NORTH AREA-ASHTON	U	1	1	2	13	384		90		
MCVICAR-ROOD-MCCALLEN										
HUNTINGTON BEACH-NORTH AREA-ASHTON	U	1		1						
MEDEARIS, PAUL A., OPERATOR										
TORRANCE-MAIN	U	2	3	5	22	651		30		
MEEKER & GARNER										
EDISON-WEST AREA	U	2	1	3	20	593				
LONG BEACH-OLD AREA-UPPER POOLS	U	1	2	3	26	782		447		
ROSECRANS-ATHENS AREA-UPPER	U		1	1	16	475		150		
COMPANY TOTAL		3	4	7	62	1,850		597		
MEEKER, WARREN L.										
PLACERITA-JUANITA AREA	U	1	6	7	115	3,450				
HUNTINGTON BEACH-HUNTINGTON AVE-JONES	S		6	6	353	10,578	3,146*	10,000	1	
SLOUGH-LOMITA LANDS	S		1	1	118	3,532	3,968*			
LONG BEACH-OLD AREA-UPPER POOLS	U		1	1	8	229		251		
ROSECRANS-ATHENS AREA-UPPER	U		1	1	8	245		40		
WILMINGTON-TOWN LOT-TAR-RANGER-TERMINAL	U		16	16	205	6,150		970		
COMPANY TOTAL		1	31	32	807	24,184	7,114*	11,261	1	
MEEKER, WARREN L., & GARNER, RUSSELL D.										
WILMINGTON-TOWN LOT-TAR-RANGER-TERMINAL	U		4	4	43	1,300		400		
MELEAR BROS. & OWEN, G. E.										
NEWPORT WEST-MAIN AREA	U	4	3	7	10	309				
MEMCO OIL CORPORATION										
WILMINGTON-TOWN LOT-TAR-RANGER-TERMINAL	U		11	11	150	4,491		1,409		
MENVEG, EMIL L.										
WILMINGTON-TOWN LOT-TAR-RANGER-TERMINAL	U		1	1	3	101				
MERCHANTS PETROLEUM COMPANY, INC.										
SESPE CANYON GRP-FOOT OF THE HILL	U	1	6	7	56	1,695		40		
MERIDIAN OIL CO.										
FRUITVALE-MARTIN-KERNCO	U	1	19	20	294	8,833				4
MERRITT ANNEX OIL COMPANY										
MIDWAY-SUNSET-MIDWAY EAST-SHALLOW	U	1	4	5	59	1,762		40		
MERRITT BROTHERS										
FRUITVALE-MARTIN-KERNCO	U		2	2	20	613				
MESA OIL & GAS COMPANY										
WILMINGTON-TOWN LOT-TAR-RANGER-TERMINAL	U		1	1	12	373				
M. & H. OIL CORPORATION										
HUNTINGTON BEACH-SOUTH OFF-SHORE-MAIN	U		1	1	78	2,330		863		

COMPANY FIELD, AREA OR POOL	CLASS	NUMBER OF WELLS: SHUT IN	PRODUCING	TOTAL	CRUDE PRODUCTION: BARRELS DAILY	BARRELS	EXCESS OR SHORTAGE BARRELS	GAS PRODUCTION M.C.F	NO. WELLS: COMP	ABD.
M H P OIL CO.										
KERN RIVER	U		10	10	28	848				
MICHELIN, JAMES										
RICHFIELD-EAST AREA	U		4	4	60	1,804		4,956	1	
WILMINGTON-TOWN LOT-TAR-RANGER-TERMINAL	U		2	2	35	1,048				
TOWN LOT-FORD	U		1	1	19	562		136		
COMPANY TOTAL			7	7	114	3,414		5,092	1	
MIDNIGHT OIL COMPANY										
PLACERITA-OLD AREA	U		1	1	4	130				
MID STATE PETROLEUM COMPANY										
BELRIDGE SOUTH	U	7	35	42	62	1,856		200		
MILCO OIL COMPANY										
LONG BEACH-OLD AREA-UPPER POOLS	U		1	1	4	131		491		
MILLER, C. R., & NICOLAI, W. E.										
HUNTINGTON BEACH-HUNTINGTON AVE-JONES	S		2	2	209	6,280	862	4,500	1	
MILLER DRILLING COMPANY										
NEWPORT WEST SURF AREA-EAST BLOCK	U		2	2	19	565				
MILLER, E. J.										
HUNTINGTON BEACH-SOUTH ON-SHORE-TAR	U	1	1	2	5	148				
MILLER & FORD										
HUNTINGTON BEACH-NORTH AREA-ASHTON	U		7	7	43	1,295		653		
NEWPORT WEST-ALDRICH AREA-B	U		1	1	12	346				
COMPANY TOTAL			8	8	55	1,641		653		
MILLER, FRED A.										
MOUNTAIN VIEW-ARVIN AREA-OTHERS	U		1	1	2	75				
MILLER, H. E.										
HUNTINGTON BEACH-SOUTH ON-SHORE-TAR	U	1		1						
MILLER, HOWARD P.										
SANTA BARBARA-VAQUEROS	U		3	3	9	275				
MILLER & MILLER										
TORRANCE-MAIN	U		4	4	15	447				
DEL AMO	U	1		1						
COMPANY TOTAL		1	4	5	15	447				
MILLER & YORK OIL OPERATIONS										
FRESNO GROUP-HELM-LANARE AREA-MIOCENE	U		1	1	66	1,984		500		
FRUITVALE-MARTIN-KERNCO	U		1	1	12	359		150		
COMPANY TOTAL			2	2	78	2,343		650		
MILLER & YORK, TRUSTEES										
POSO CREEK GROUP-MCVAN	U	1		1						

COMPANY FIELD, AREA OR POOL	CLASS	NUMBER OF WELLS: SHUT IN	PRODUCING	TOTAL	CRUDE PRODUCTION: BARRELS DAILY	BARRELS	EXCESS OR SHORTAGE BARRELS	GAS PRODUCTION M.C.F	NO. WELLS COMP. ABD.
MILLHAR ASSOCIATES									
HUNTINGTON BEACH-NORTH AREA-ASHTON	U	1		1					
MILLIGAN, GEORGE W., & MILLIGAN DONALD E.									
TORRANCE-DEL AMO	U	1		1					
MILLS, KENNETH									
LONG BEACH-OLD AREA-UPPER POOLS	U		1	1	3	90			
MILLS, R. R.									
LONG BEACH-OLD AREA-UPPER POOLS	U	2	6	8	30	907		1,632	
MILLS, WAYNE									
LONG BEACH-OLD AREA-UPPER POOLS	U		1	1				132	
ROSECRANS-HOWARD TOWNSITE AREA-7&8	U		1	1	8	245			
COMPANY TOTAL			2	2	8	245		132	
MIL-RUS OIL COMPANY									
PLACERITA-JUANITA AREA	U	1	1	2	2	65			
MILTON OIL CORPORATION									
HUNTINGTON BEACH-SOUTH OFF-SHORE-MAIN	U		1	1	15	447		436	
MINERAL OIL COMPANY									
LONG BEACH-OLD AREA-UPPER POOLS	U		1	1	13	386		238	
MINNER, J. R.									
WELCOME VALLEY	U	1	10	11	5	136			
MITCHELL, B. J.									
SANTA MARIA VALLEY-MAIN	U		1	1	7	207		20	
MITCHELL, EDW. H., CO.									
MIDWAY SUNSET-MIDWAY WEST-UPPER	U	4	8	12	90	2,702			
MITCHELL & TERRY									
HUNTING BAACH-HUNTINGTON AVE-JONES	S		5	5	382	11,449	670	15,000	1
MITCHELL, WALTER H.									
HUNTINGTON BEACH-NORTH AREA-ASHTON	U		1	1	3	96		84	
M J M & M OIL COMPANY									
MOUNTAIN VIEW-MAIN AREA-WIBLE-NOZU	U	1	1	2	7	212		38	
CAT CANYON WEST-LOS FLORES	S		1	1	19	571		10	
THOMAS	U		3	3	125	3,765		440	
COMPANY TOTAL		1	5	6	151	4,548		488	
M J M & M OIL CO. & MOHAWK PETROLEUM CORPORATION									
POSO CREEK GROUP-PREMIER MAIN AREA	U		2	2	30	903			
M. K. F. OIL COMPANY									
HUNTINGTON BEACH-NORTH AREA-ASHTON	U		1	1	6	168		170	

COMPANY FIELD, AREA OR POOL	CLASS	NUMBER OF WELLS: SHUT IN	PRODUCING	TOTAL	CRUDE PRODUCTION: BARRELS DAILY	BARRELS	EXCESS OR SHORTAGE BARRELS	GAS PRODUCTION M.C.F	NO. WELLS: COMP'D	ABD.
POSO CREEK GROUP-PREMIER MAIN AREA	U		2	2	30	903				
M. K. F. OIL COMPANY										
HUNTINGTON BEACH-NORTH AREA-ASHTON	U		1	1	6	168		170		

COMPANY FIELD, AREA OR POOL	CLASS	NUMBER OF WELLS: SHUT IN	PRODUCING	TOTAL	CRUDE PRODUCTION: BARRELS DAILY	BARRELS	EXCESS OR SHORTAGE BARRELS	GAS PRODUCTION M.C.F	NO. WELLS: COMP'D	ABD.
M & M ASSOCIATES										
SOUTH MOUNTAIN-SESPE	U	1	1	2	3	96		250		
MOCAL CORPORATION										
MIDWAY SUNSET-MIDWAY WEST-UPPER	U		15	15	78	2,353		70		
MOHAWK PETROLEUM CORPORATION										
FRUITVALE-MARTIN-KERNCO	U	2	10	12	149	4,480				
MOUNTAIN VIEW-MAIN AREA-OTHERS	U	7	4	11	46	1,394		406		
COMPANY TOTAL		9	14	23	195	5,874		406		
MONARCH OIL & GAS CO. &										
FISCHGRUND, JAMES & SIDNEY										
HUNTINGTON BEACH-HUNTINGTON AVE-JONES	S		3	3	149	4,456	1,844*	4,400	1	
MONROE, W. C.										
OTHER FIELDS-CIERVO	U	1	3	4	5	157				
MONTECAL OIL COMPANY										
EDISON-MAIN AREA-UPPER	U	3	25	28	251	7,526				
MAIN AREA-FRACTURED SCHIST	U		12	12	284	8,508		1,694		
COMPANY TOTAL		3	37	40	535	16,034		1,694		
MONTEREY OIL COMPANY										
JACALITOS-TEMBLOR	U		17	17	167	5,012		3,579		
EDISON-MAIN AREA-UPPER	U	1	44	45	662	19,861		7,122		
MAIN AREA-FRACTURED SCHIST	U		62	62	2,856	85,692		63,137		
GREELEY-RIO BRAVO	S		1	1	172	5,150	50	6,026		
LOST HILLS-MAIN	U		3	3	21	627				
MCDONALD ANTICLINE-LAYMAN AREA	U	1	6	7	38	1,127				
MIDWAY-SUNSET-MIDWAY EAST-SHALLOW	U		4	4	10	292		250		
MIDWAY WEST-UPPER	U	1	12	13	163	4,877		690		
MOUNTAIN VIEW-MAIN AREA-OTHERS	U		5	5	50	1,515		1,000		
OTHER FIELDS-CHENEY RANCH	U	1		1						
SHIELLS CANYON-SESPE	U	2	23	25	108	3,250		6,474	1	
GATO RIDGE-TOGNAZZINI	S		5	5	194	5,831		177		
LOMPOC-MONTEREY	S	1		1						
RINCON-MAIN AREA-HOBSON TOMSON-MILEY	U		6	6	158	4,746		2,954		
MAIN AREA-C-9	U		2	2	158	4,754		2,955		
BELMONT OFF-SHORE	U		6	6	190	5,699		1,488	1	
BREA OLINDA-BREA AREA-OTHERS	U	3	21	24	412	12,351		6,356		
HUNTINGTON BEACH-SOUTH OFF-SHORE-JONES	S		2	2	178	5,338	4,018	3,959		
SOUTH OFF-SHORE-MAIN	U		12	12	439	13,168		7,640		
INGLEWOOD-SENTOUS	U		2	2	20	603		214		
LONG BEACH-OLD AREA-UPPER POOLS	U	3	42	45	1,071	32,127		22,128		

COMPANY FIELD, AREA OR POOL	CLASS	NUMBER OF WELLS: SHUT IN	PRODUCING	TOTAL	CRUDE PRODUCTION: BARRELS DAILY	BARRELS	EXCESS OR SHORTAGE BARRELS	GAS PRODUCTION M.C.F	NO. WELLS: COMP	ABD.
OLD AREA-DE SOTO SOUTH FLANK	U		1	1	26	776		719		
MONTEBELLO-MAIN AREA-BALDWIN 1-2-3	U	4	24	28	211	6,320		11,222		
NEWPORT WEST-MAIN AREA	U		3	3	24	716				
OFF-SHORE AREA	S		7	7	692	20,749	3,199	3,044		
PLAYA DEL REY-VENICE AREA	U		3	3	49	1,468		1,122		
POTRERO-EAST AREA	U		1	1	9	272		12,173		
ROSECRANS-MAIN AREA-O DEA	U		1	1	20	606		272		
SANTA FE SPRINGS-OTHERS	U		7	7	82	2,463		1,935		
WILMINGTON-HARBOR-FB-IV-RANGER	U		5	5	69	2,059		1,623		
HARBOR-FBV-RANGER	U		4	4	63	1,882		742		
TOWN LOT-TAR-RANGER-TERMINAL	U		19	19	162	4,864		427		
COMPANY TOTAL		17	350	367	8,474	254,195	7,267	169,428	2	
MONTEREY OIL COMPANY, OPERATOR										
ROSECRANS-ATHENS AREA-UPPER	U		1	1	5	146		48		
MOON OIL COMPANY										
TORRANCE-DEL AMO	U		1	1	3	93		155		
MOORE, R. W.										
TORRANCE-MAIN	U		1	1	7	203		191		
WILMINGTON-TOWN LOT-TAR-RANGER-TERMINAL	U	1	1	2	5	140				
COMPANY TOTAL		1	2	3	12	343		191		
MORGAN OIL COMPANY										
YORBA LINDA-SMITH	U	2	3	5	44	1,307				
MORIQUI EXPLORATION COMPANY										
BELGIAN ANTICLINE NW-MORIQUI-PHACOIDES	S		1	1	92	2,755				
MORRIS, MARK										
EDISON-MAIN AREA-FRACTURED SCHIST	U		1	1	92	2,771				
WEST AREA	U	5	5	10	16	475				
COMPANY TOTAL		5	6	11	108	3,246				
MORRIS, MARK, & ASSOCIATE										
EDISON-WEST AREA	U		1	1	15	457				
MORRISON, C. S.										
KERN RIVER	U	5	62	67	34	1,022				
MORROW OIL COMAPNY										
WILMINGTON-TOWN LOT-TAR-RANGER-TERMINAL	U	1	2	3	44	1,331				
MORROW, TEVIS F.- OIL PROPERTIES										
PLACERITA-JUANITA AREA	U	16	4	20	39	1,178				
MORTON AND DOLLEY										
EDISON-PORTALS-FAIRFAX AREA-WICKER	U		3	3	60	1,809				
RACE TRACK HILL-PYRAMID HILL	S		1	1	6	185		1,179		

COMPANY FIELD, AREA OR POOL	CLASS	NUMBER OF WELLS: SHUT IN	PRODUCING	TOTAL	CRUDE PRODUCTION: BARRELS DAILY	BARRELS	EXCESS OR SHORTAGE BARRELS	GAS PRODUCTION M.C.F	NO WELLS: COMP	ABD.
FRUITVALE-MARTIN-KERNCO	U		1	1	2	66				
MOUNTAIN VIEW-ARVIN AREA-H S J-2	U		1	1	35	1,050				
ARVIN AREA-OTHERS	U		5	5	86	2,590				
MAIN AREA-OTHERS	U		2	2	58	1,749				
NEWHALL GROUP-TUNNEL	U	4	22	26	173	5,176				
PLACERITA-JUANITA AREA	U	5	10	15	220	6,586				
HUNTINGTON BEACH-SOUTH ON-SHORE-TAR	U	1	3	4	12	369				
LONG BEACH-OLD AREA-UPPER POOLS	U	1	4	5	35	1,047		472		
OLD AREA-DE SOTO SOUTH FLANK	U		2	2	46	1,377		1,791		
MONTEBELLO-MAIN AREA-BALDWIN 1-2-3	U		1	1	1	32				
NEWPORT WEST-ALDRICH AREA-B	U		4	4	47	1,408				
SANTA FE SPRINGS-OTHERS	U	1	2	3	22	646		127		
SEAL BEACH-ALAMITOS AREA	U	2	3	5	33	1,003		2,015		
TORRANCE-MAIN	U	2	18	20	150	4,494		1,989		
DEL AMO	U		1	1	5	157		58		
WILMINGTON-TERMINAL-FB-I-TAR-RGR-TERM	U	1	4	5	44	1,323				
TOWN LOT-TAR-RANGER-TERMINAL	U		28	28	336	10,072		1,272		
TOWN LOT-FORD	U		1	1	17	496		604		
COMPANY TOTAL		17	116	133	1,388	41,635		9,507		
MORTON, DOLLEY, CAMPBELL, & SHELL										
FRUITVALE-MARTIN-KERNCO	U	2		2						
MORTON, HAROLD C.										
HUNTINGTON BEACH-SOUTH ON-SHORE-TAR	U		2	2	11	318				
LONG BEACH-OLD AREA-UPPER POOLS	U		4	4	67	1,996		2,001		
COMPANY TOTAL			6	6	78	2,314		2,001		
MORTON, HAROLD C., & KOHLBUSH, H. S.										
HUNTINGTON BEACH-NORTH AREA-ASHTON	U	2	14	16	143	4,277		2,447		
NEWPORT WEST-ANAHEIM SUGAR AREA	U		1	1	15	437				
TORRANCE-MAIN	U		7	7	37	1,123		186		
COMPANY TOTAL		2	22	24	195	5,837		2,633		
MORTON & SONS										
NEWPORT WEST-ANAHEIM SUGAR AREA	U		2	2	73	2,200				
MOSIER, M. H., SPECIAL										
HUNTINGTON BEACH-NORTH AREA-ASHTON	U	1	2	3	30	899		338		
MT. DIABLO CO.										
MIDWAY SUNSET-MIDWAY WEST-UPPER	U	11	87	98	419	12,567		750	1	
MOUNTAIN VALLEY OIL CO. AND CELLA VINEYARDS										
ROSECRANS-SOUTH AREA-O DEA	U		1	1	9	260		463		

COMPANY FIELD, AREA OR POOL	CLASS	NUMBER OF WELLS: SHUT IN	PRODUCING	TOTAL	CRUDE PRODUCTION: BARRELS DAILY	BARRELS	EXCESS OR SHORTAGE BARRELS	GAS PRODUCTION M.C.F	NO. WELLS COMP. ABD.
M. R. B. COMPANY									
HUNTINGTON BEACH-SOUTH ON-SHORE-TAR	U		1	1	9	256			
M & S OIL COMPANY									
TORRANCE-DEL AMO	U	1		1					
M. T. R. OIL COMPANY									
HUNTINGTON BEACH-NORTH AREA-TAR BOLSA	U	1		1					
NORTH AREA-ASHTON	U	1		1					
COMPANY TOTAL		2		2					
MUIR AND FRANCIS									
RICHFIELD-EAST AREA	U	1		1					
MURPHY BROS., LTD.									
LOMPOC-MONTEREY	S		3	3	30	905		1,931	
MUTZ, JAMES, AND CANTOR, GEORGE									
NEWPORT WEST-ALDRICH AREA-C	U		1	1	4	120			
M. & W. OIL COMPANY									
EDISON-WEST AREA	U		1	1	4	120			
HUNTINGTON BEACH-NORTH AREA-ASHTON	U		1	1	13	378		179	
COMPANY TOTAL			2	2	17	498		179	
M. W. V. W. OIL COMPANY									
WILMINGTON-TOWN LOT-TAR-RANGER-TERMINAL	U		1	1	13	378			
NATIONAL ENTERPRISES, INC.									
FRUITVALE-MARTIN-KERNCO	U	1		1					
NATIONAL OIL COMPANY									
KERN FRONT	U	1	50	51	249	7,460			
MIDWAY SUNSET-MIDWAY WEST-UPPER	U	3	46	49	608	18,253		775	
COMPANY TOTAL		4	96	100	857	25,713		775	
NATOLI, SALVATORE, JR.									
WILMINGTON-HARBOR-FBV-RANGER	U		1	1	9	275		150	
NATURAL GASOLINE COMPANY									
MIDWAY SUNSET-MIDWAY WEST-UPPER	U		13	13	50	1,497		100	
MONTEBELLO-WEST AREA	U		1	1	2	67		20	
COMPANY TOTAL			14	14	52	1,564		120	
NAVY OIL COMPANY, INC.									
SANTA MARIA VALLEY-MAIN	U		1	1	17	510			
NEAVES PETROLEUM DEVELOPMENTS									
HUNTINGTON BEACH-HUNTINGTON AVE-JONES	S		9	9	588	17,650	31*	32,972	4
TORRANCE-MAIN	U		5	5	79	2,377		1,999	
WILMINGTON-HARBOR-FB-IV-RANGER	U	1		1	48*	1,439*/			
COMPANY TOTAL		1	14	15	619	18,588	31*	34,971	4
NEDAL OIL COMPANY									
HUNTINGTON BEACH-HUNTINGTON AVE-JONES	S		1	1	86	2,568	912*	2,000	

COMPANY FIELD, AREA OR POOL	CLASS	NUMBER OF WELLS: SHUT IN	PRODUCING	TOTAL	CRUDE PRODUCTION: BARRELS DAILY	BARRELS	EXCESS OR SHORTAGE BARRELS	GAS PRODUCTION M.C.F	NO. WELLS: COMP	ABD.
COMPANY TOTAL		1	14	15	619	18,588	31*	34,971	4	
NEDAL OIL COMPANY										
HUNTINGTON BEACH-HUNTINGTON AVE-JONES	S		1	1	86	2,568	912*	2,000		
NEEDHAM, NEIL C.										
RINCON-MAIN AREA-HOBSON TOMSON-MILEY	U		1	1	4	127		4		
NELSON & ASSOCIATES										
LONG BEACH-OLD AREA-UPPER POOLS	U		1	1	16	491		1,140		
NELSON-MITCHELL COMPANY										
SANTA FE SPRINGS-OTHERS	U		3	3	28	843		935		
NEVADA PETROLEUM CORPORATION										
ROSECRANS-MAIN AREA-MAXWELL-HOGE	U		1	1	5	138		160		
NEW-CAL ASSOCIATES										
FRUITVALE-MARTIN-KERNCO	U		2	2	18	540				
NEWENHAM, DEANE										
HUNTINGTON BEACH-SOUTH ON-SHORE-TAR	U	1		1						
SOUTH ON-SHORE-MAIN	U		1	1	4	117				
COMPANY TOTAL		1	1	2	4	117				
NEWHALL LAND & FARMING COMPANY, THE										
DEL VALLE WEST AREA-VASQUEZ 14	S		2	2	9	269		104		
NEWHALL REFINING CO., INC.										
PLACERITA-JUANITA AREA	U		2	2	8	227				
OLD AREA	U		5	5	51	1,545				
COMPANY TOTAL			7	7	59	1,772				
NEWMAN, SAM B., & GIBBONS, S. H.										
TEJON GROUP-COMANCHE POINT	U		9	9	11	325				
NICOLAI & HAMILTON										
HUNTINGTON BEACH-NORTH AREA-ASHTON	U		1	1	7	219		59		
LONG BEACH-OLD AREA-UPPER POOLS	U		1	1	9	271		229		
COMPANY TOTAL			2	2	16	490		288		
NICOLAI, W. E.										
HUNTINGTON BEACH-NORTH AREA-ASHTON	U		3	3	23	677		198		
WILMINGTON-TOWN LOT-TAR-RANGER-TERMINAL	U		3	3	29	884		415		
COMPANY TOTAL			6	6	52	1,561		613		
NICOLAI, W. E., & ASSOCIATES										
NEWPORT WEST-MAIN AREA	U		1	1	2	50				
NICOLAI, W. E., & CHRIST, C. H.										
NEWPORT WEST-MAIN AREA	U		2	2	19	581				
NICOLAI, W. E., & SONS										
HUNTINGTON BEACH-HUNTINGTON AVE-JONES	S		1	1	25	750	460	700	1	
NORBEL OIL COMPANY										
FRUITVALE-MARTIN-KERNCO	U	5	17	22	510	15,308		2,320		
NORRIS OIL COMPANY										
PYRAMID HILLS-ORCHARD	U		1	1	10	308				

COMPANY FIELD, AREA OR POOL	CLASS	NUMBER OF WELLS: SHUT IN	PRODUCING	TOTAL	CRUDE PRODUCTION: BARRELS DAILY	BARRELS	EXCESS OR SHORTAGE BARRELS	GAS PRODUCTION M.C.F	NO. WELLS COMP. ABD.
OTHERS	U	1		1					
COMPANY TOTAL		1	1	2	10	308			
NORTH STAR MINING & DEVELOPMENT COMPANY									
TORRANCE-MAIN	U	3	1	4	5	165			
NORTHSIDE OIL COMPANY									
LONG BEACH-OLD AREA-UPPER POOLS	U		1	1	4	115		67	
NORTHWEST SYNDICATE & BRITISH-AMERICAN OIL PRODUCING COMPANY, THE									
FRESNO GROUP-RAISIN CITY-MIOCENE	U		2	2	64	1,914		289	
OAKES, R. F., & COMBS, E. E., ET AL.									
FRUITVALE-MARTIN-KERNCO	U		2	2	14	430			
ROSECRANS-SOUTH AREA-ZINS	U		1	1	5	145		1,098	
WILMINGTON-HARBOR-FBV-RANGER	U		2	2	33	981			
COMPANY TOTAL			5	5	52	1,556		1,098	
OBISPO OIL COMPANY									
MIDWAY-SUNSET-MIDWAY EAST-SHALLOW	U	3	11	14	273	8,181		7,174	
OBRIEN, HOWARD F.									
HUNTINGTON BEACH-NORTH AREA-ASHTON	U		1	1	4	129			
SOUTH ON-SHORE-TAR	U	4	2	6	13	390			
SOUTH ON-SHORE-MAIN	U	2	3	5	18	537			
COMPANY TOTAL		6	6	12	35	1,056			
OCEAN FRONT OIL COMPANY									
HUNTINGTON BEACH-SOUTH OFF-SHORE-MAIN	U		1	1	30	889		300	
OCEANIC OIL COMPANY									
EDISON-MAIN AREA-FRACTURED SCHIST	U		1	1	7	204			
WEST AREA	U		3	3	20	611			
KERN BLUFF	U		46	46	362	10,855			
KERN RIVER	U		10	10	58	1,740			
MIDWAY SUNSET-MIDWAY WEST-UPPER	U	1	1	2	20	615			
MIDWAY WEST-REPUBLIC	U		27	27	1,755	52,661			1
MIDWAY WEST-GEN. AMER.	U		8	8	718	21,534			
MOUNTAIN VIEW-MAIN AREA-OTHERS	U	16	19	35	410	12,302		8,122	
LONG BEACH-OLD AREA-UPPER POOLS	U	1	2	3	91	2,727		9,053	
WILMINGTON-TOWN LOT-TAR-RANGER-TERMINAL	U		1	1	5	156			
COMPANY TOTAL		18	118	136	3,446	103,405		17,175	1
OCONNELL, FENTON									
LOMERIAS	U	2		2					
O. D. OIL COMPANY									
HUNTINGTON BEACH-SOUTH ON-SHORE-MAIN	U		1	1	8	240		78	

COMPANY FIELD, AREA OR POOL	CLASS	NUMBER OF WELLS: SHUT IN	PRODUCING	TOTAL	CRUDE PRODUCTION: BARRELS DAILY	BARRELS	EXCESS OR SHORTAGE BARRELS	GAS PRODUCTION M.C.F	NO. WELLS COMP. ABD.
O. D. OIL COMPANY									
HUNTINGTON BEACH-SOUTH ON-SHORE-MAIN	U		1	1	8	240		78	
SOUTH OFF-SHORE-MAIN	U		2	2	51	1,516		434	
COMPANY TOTAL			3	3	59	1,756		512	
ODONNELL, J. L.									
HUNTINGTON BEACH-NORTH AREA-ASHTON	U		1	1	13	400			
LONG BEACH-OLD AREA-UPPER POOLS	U	1	5	6	45	1,342		690	
TORRANCE-MAIN	U		16	16	306	9,172		3,923	
DEL AMO	U		2	2	37	1,096		680	
WILMINGTON-HARBOR-FBV-RANGER	U		4	4	33	988		3,630	
TOWN LOT-TAR-RANGER-TERMINAL	U		6	6	89	2,684		1,721	
COMPANY TOTAL		1	34	35	523	15,682		10,644	
OHIO OIL COMPANY, THE									
BELRIDGE SOUTH	U		17	17	89	2,680			
CANAL-STEVENS	S	6	15	21	559	16,775	312*	99,094	
BELGIAN ANTICLINE-N W-OCEANIC	S	2	5	7	750	22,509	1,070	33,265	
N W-PT. OF ROCKS 2ND	S		3	3	277	8,308		26,944	
N W-PT. OF ROCKS 3RD	U	1	1	2	8	241		43,816	
PALOMA-MAIN AREA-PALOMA CRUDE OIL	S		6	6	55	1,639		33,397	
POSO CREEK GROUP-PREMIER MAIN AREA	U	6	18	24	308	9,254		2,400	
DEL VALLE-WEST AREA-SEPULVEDA	U		3	3	97	2,896		9,110	
WEST AREA-VASQUEZ 13	S		2	2	41	1,237	1,557*	2,966	
WEST AREA-VASQUEZ-VIDEGAIN	S		6	6	223	6,690		12,912	
WEST AREA-VASQUEZ 14	S		3	3	50	1,490		9,012	
PLAYA DEL REY-VENICE AREA	U	4	15	19	194	5,818		5,268	
COMPANY TOTAL		19	94	113	2,651	79,537	799*	278,184	
OHIO OIL COMPANY THE#									
STRAND-STEVENS UPPER	U				2	64		118	
STEVENS LOWER	U				56	1,670		773	
COMPANY TOTAL					58	1,734		891	
OIL TOOL CORPORATION, THE									
HUNTINGTON BEACH-NORTH AREA-ASHTON	U		1	1	1	37			
OJAI OIL COMPANY									
OJAI GROUP-SISAR-SILVERTHREAD	U	3	7	10	11	338			1
OLINGER, ETHEL B.									
WILMINGTON-HARBOR-FBV-RANGER	U		3	3	35	1,059		1,093	
TOWN LOT-TAR-RANGER-TERMINAL	U	1	5	6	84	2,516		1,010	
COMPANY TOTAL		1	8	9	119	3,575		2,103	
OLSEN & OLIVER									
LONG BEACH-OLD AREA-UPPER POOLS	U		1	1	19	563		118	
O. M. OIL COMPANY									
POSO CREEK GROUP-PREMIER MAIN AREA	U		2	2	18	552			

COMPANY FIELD, AREA OR POOL	CLASS	NUMBER OF WELLS: SHUT IN	PRODUCING	TOTAL	CRUDE PRODUCTION: BARRELS DAILY	BARRELS	EXCESS OR SHORTAGE BARRELS	GAS PRODUCTION M.C.F	NO. WELLS COMP ABD.
TORRANCE-MAIN	U		2	2	18	532		204	
DEL AMO	U		1	1	2	72		39	
COMPANY TOTAL			5	5	38	1,156		243	
OMEARA, R. B. & SIEMON, J. H.									
MOUNTAIN VIEW-MAIN AREA-OTHERS	U		1	1	5	140		10	
OMEARA, ROGERS, & SIEMON									
FRUITVALE-MARTIN-KERNCO	U		2	2	27	825		20	
OMELIA, P. J. & J. E.									
WHITTIER-RIDEOUT HEIGHTS AREA	U		5	5	39	1,171			
ORCO OIL COMPANY									
HUNTINGTON BEACH-SOUTH OFF-SHORE-MAIN	U		1	1	65	1,944		574	
ORIN PETROLEUM COMPANY									
HUNTINGTON BEACH-SOUTH ON-SHORE-TAR	U		5	5	42	1,275			
OWENS, B. D.									
CAPITAN-ERBURU	U		1	1	6	170		171	
HUNTINGTON BEACH-NORTH AREA-TAR BOLSA	U		1	1	5	157			
COMPANY TOTAL			2	2	11	327		171	
OWENS, BEN, DRILLING CO.									
NEWPORT WEST-ALDRICH AREA-B	U		1	1	19	583		619	
OWENS & DUNSMOOR									
LONG BEACH-OLD AREA-UPPER POOLS	U		1	1	8	238		64	
O. W. S. OIL COMPANY									
MOUNT POSO GROUP-DOMINION-VEDDER	U	1	2	3	2	50			
OXNARD OIL & REFINING COMPANY									
OXNARD-MIOCENE	U	1	2	3	56	1,678			
PACIFIC AMERICAN OIL COMPANY									
TORRANCE-MAIN	U		17	17	100	3,010		279	
PACIFIC COAST GASOLINE COMPANY									
WILMINGTON-TOWN LOT-TAR-RANGER-TERMINAL	U		1	1	12	347		356	
PACIFIC DRILLING COMPANY									
HUNTINGTON BEACH-SOUTH ON-SHORE-MAIN	U		1	1	3	98			
PACIFIC LIGHTING GAS SUPPLY COMPANY									
SANSINENA-OTHER AREAS-PLIOCENE	U	7		7					
PACIFIC OIL & GAS DEVELOPMENT CORP.									
PYRAMID HILLS-OTHERS	U		11	11	81	2,423			
OTHER FIELDS-JASMIN	U	4	6	10	57	1,706			
COMPANY TOTAL		4	17	21	138	4,129			
PACIFIC STATES PETROLEUM COMPANY									
COALINGA-WESTSIDE AREA-TEMBLOR	U	3	2	5	3	90		6	

COMPANY FIELD, AREA OR POOL	CLASS	NUMBER OF WELLS: SHUT IN	PRODUCING	TOTAL	CRUDE PRODUCTION: BARRELS DAILY	BARRELS	EXCESS OR SHORTAGE BARRELS	GAS PRODUCTION M.C.F	NO. WELLS: COMP. ABD.
PACIFIC STATES PROPERTIES INC									
OTHER FIELDS-CHINO HILLS	U	1	1	2	4	124		15	
PACIFIC SUPPLY COOPERATIVE									
SESPE CANYON GRP-SECTIONS 23&26	U	7		7					
LONG BEACH-OLD AREA-UPPER POOLS	U		1	1	12	347		803	
NEWPORT WEST-MAIN AREA	U	1	2	3	7	216			
SURF AREA-EAST BLOCK	U		4	4	32	949		82	
SEAL BEACH-ALAMITOS AREA	U	1	3	4	38	1,142		2,972	
COMPANY TOTAL		9	10	19	89	2,654		3,857	
PACIFIC WESTERN OIL CORPORATION									
EDISON-PORTALS-FAIRFAX AREA-WICKER	U		3	3	52	1,574			
WEST AREA	U		3	3	32	973			
FRESNO GROUP-HELM-LANARE AREA-MIOCENE	U		3	3	41	1,242		1,187	
HELM-LANARE AREA-EOCENE	U		1	1	10	305		809	
RIVERDALE-MIOCENE	S		2	2	29	884		1,743	
RIVERDALE-EOCENE	S	1	3	4	42	1,256		1,733	
SAN JOAQUIN-EOCENE	U		4	4	50	1,515			
FRUITVALE-MARTIN-KERNCO	U		1	1	33	1,001			
KERN FRONT	U	11	84	95	610	18,286			
BELGIAN ANTICLINE-N W-PHACOIDES	S		1	1				317	
N W-OCEANIC	S		1-						
	S		14	13	1,341	40,225	1,766	112,860	
N W-PT. OF ROCKS 1ST	U		1-						
	U		2	1	34	1,033		14,785	
N W-PT. OF ROCKS 2ND	S		1-						
	S		14	13	1,252	37,573		113,283	
N W-PT. OF ROCKS 3RD	U	2	6	8	131	3,944		204,815	
R K-PT. OF ROCKS 3RD	U		1	1	22	675		3,493	
SOUTHEAST-RANKIN	U								1
SOUTHEAST-PHACOIDES	S	1	2	3	35	1,057		2,913	
S E-POINT OF ROCKS	S		5	5	136	4,069		6,064	
TEL. HILLS-3CEANIC	U		1	1	18	545		6,309	
MOUNT POSO GROUP-MOUNT POSO-VEDDER	U		21	21	369	11,084			1
MOUNTAIN VIEW-ARVIN AREA-OTHERS	U		5	5	47	1,403		2,340	
MAIN AREA-OTHERS	U	1	2	3	68	2,046		3,126	
PALOMA-MAIN AREA-PALOMA CRUDE OIL	S	2	1	3	31	919	319	62,761	
POSO CREEK GROUP-ENAS	U	1	10	11	75	2,238			
MCVAN	U		2	2	13	400			
ELWOOD-VAQUEROS	U	3	14	17	82	2,460		3,384	2

COMPANY FIELD, AREA OR POOL	CLASS	NUMBER OF WELLS: SHUT IN	PRODUCING	TOTAL	CRUDE PRODUCTION: BARRELS DAILY	BARRELS	EXCESS OR SHORTAGE BARRELS	GAS PRODUCTION M.C.F	NO. WELLS: COMP	ABD.
SESPE	U		1	1	4	110		85		
DEL VALLE-EAST AREA-DEL VALLE	S		1	1	18	549	51*	481		
PIRU GROUP-MODELO	U	9	10	19	6	178				
TEMESCAL	U		15	15	302	9,058		7,162		
SIMI-SESPE-EOCENE	U	5	37	42	32	966				
SOUTH MOUNTAIN-SESPE	U		10	10	101	3,041		2,173		
CAT CANYON WEST-PLIOCENE	U	2	8	10	82	2,472		894		
LOS FLORES	S		11	11	932	27,972	4,243	22,548		
SANTA MARIA VALLEY-MAIN	U	5	30	35	298	8,936		11,540		
VENTURA-C-BLOCK	U	1	18	19	325	9,765		26,817		
SAN ARDO-CAMPBELL AREA-AURIGNAC	S		1	1	34	1,030	50*			
HUNTINGTON BEACH-SOUTH ON-SHORE-TAR	U	3	4	7	9	263				
SOUTH ON-SHORE-MAIN	U		6	6	62	1,858		2,807		
LONG BEACH-OLD AREA-UPPER POOLS	U	2	14	16	140	4,191		3,301		
OLD AREA-DE SOTO SOUTH FLANK	U		2	2	33	981		370		
NEWPORT WEST-ANAHEIM SUGAR AREA	U		4	4	83	2,488				
ROSECRANS-ATHENS AREA-UPPER	U		2	2	5	139		180		
ATHENS AREA-LOWER	U		3	3	10	290		676		
HOWARD TOWNSITE AREA-7&8	U		2	2	19	557		1,687		
SANTA FE SPRINGS-OTHERS	U	6	18	24	222	6,652		12,983		
SEAL BEACH-ALAMITOS AREA	U	2	14	16	164	4,935		6,455		
TORRANCE-MAIN	U	4	17	21	102	3,068		2,532		
DEL AMO	U		9	9	68	2,029		1,848		
WILMINGTON-TOWN LOT-TAR-RANGER-TERMINAL	U	2	16	18	233	7,000		5,501		
TOWN LOT-FORD	U		2	2	18	545		257		
COMPANY TOTAL		63	457	520	7,855	235,780	6,227	652,219	1	3
PACKARD PETROLEUM CORPORATION										
TORRANCE-MAIN	U		1	1	7	205		120		
WILMINGTON-TOWN LOT-TAR-RANGER-TERMINAL	U		1	1	10	294				
COMPANY TOTAL			2	2	17	499		120		
PALM OIL COMPANY										
HUNTINGTON BEACH-NORTH AREA-TAR BOLSA	U	1		1						
NORTH AREA-ASHTON	U		2	2	19	583				
TORRANCE-MAIN	U	3	7	10	96	2,875				
DEL AMO	U	1		1						
COMPANY TOTAL		5	9	14	115	3,458				
PALOMAR OIL & REFINING CORPORATION										
FRUITVALE-MARTIN-KERNCO	U	1		1						
KERN RIVER	U	1	9	10	4	114				
COMPANY TOTAL		2	9	11	4	114				

COMPANY FIELD, AREA OR POOL	CLASS	NUMBER OF WELLS: SHUT IN	PRODUCING	TOTAL	CRUDE PRODUCTION: BARRELS DAILY	BARRELS	EXCESS OR SHORTAGE BARRELS	GAS PRODUCTION M.C.F	NO. WELLS COMP. ABD.
KERN RIVER	U	1	9	10	4	114			
COMPANY TOTAL		2	9	11	4	114			
PANTAGES, R. A.									
VENTURA-D-5 WEST	S		1	1	46	1,378	718	5,695	
ROSECRANS-HOWARD TOWNSITE AREA-768	U		4	4	61	1,827		14,426	
COMPANY TOTAL			5	5	107	3,205	718	20,121	
PARAFFINE OIL COMPANY									
MIDWAY SUNSET-MIDWAY WEST-UPPER	U		7	7	87	2,611		2,150	
PARAMOUNT OIL COMPANY									
WELCOME VALLEY	U	15		15					
PARCAN OIL COMPANY									
WHITTIER-CENTRAL AREA-MAIN	U	1	11	12	12	373			
PARKER, M. C. OIL COMPANY									
KERN RIVER	U		20	20	33	1,000			
PATTERSON-BALLAGH LEASE									
MIDWAY SUNSET-MIDWAY WEST-UPPER	U		10	10	24	717			
PATTERSON, BENJAMIN H.									
MIDWAY SUNSET-MIDWAY WEST-UPPER	U		4	4	10	304		40	
PATTON & CONAWAY									
TORRANCE-MAIN	U		1	1	8	248		531	
PAULEY, EDWIN W.									
FRESNO GROUP-RAISIN CITY-TAR-MIOCENE	U		3	3	64	1,934		660	
RAISIN CITY-MIOCENE	U	1	1	2	44	1,328		810	
TEJON GRAPEVINE-CENTRAL AREA-S-P	U	1		1					
CENTRAL AREA-RESERVE	U		1	1	32	956			
OAK MOUNTAIN-WIGDAL	U		1	1	34	1,017		1,500	
EAST LOS ANGELES	U		1	1	9	273		41	
LAWNDALE-UPPER POOL	U		1	1	6	170			
JOHNSON	U		2	2	159	4,758		13,811	
NEWPORT WEST-MAIN AREA	U	2	1	3	7	214			
ROSECRANS-HOWARD TOWNSITE AREA-ZINS	U		1	1	52	1,550		34,078	
HOWARD TOWNSITE AREA-768	U		2	2	94	2,807		19,768	
COMPANY TOTAL		4	14	18	501	15,007		70,668	
PAULEY, EDWIN W. & HAROLD R.									
HYPERION	U		1	1	27	808		145	
PAULIN OIL COMPANY									
LONG BEACH-OLD AREA-UPPER POOLS	U		2	2	24	726		163	
AIRPORT AREA	S		1	1	501	15,037	7,777	96,650	
COMPANY TOTAL			3	3	525	15,763	7,777	96,813	
PECK, VERNON P. & LORRAINE F.									
NEWPORT WEST-MAIN AREA	U		2	2	24	715			

COMPANY FIELD, AREA OR POOL	CLASS	NUMBER OF WELLS: SHUT IN	PRODUCING	TOTAL	CRUDE PRODUCTION: BARRELS DAILY	BARRELS	EXCESS OR SHORTAGE BARRELS	GAS PRODUCTION M.C.F	NO. WELLS COMP ABD.
PEDRO PETROLEUM CORPORATION									
KERN FRONT	U	1	1	2	1	30			
HUNTINGTON BEACH-NORTH AREA-ASHTON	U	1	2	3	16	494		463	
SANTA FE SPRINGS-OTHERS	U		5	5	76	2,292		2,513	
COMPANY TOTAL		2	8	10	93	2,816		2,976	
PEGORS, HARRY H.									
TORRANCE-MAIN	U		4	4	28	833		314	
PERRY, C. G., DRILLING CO.									
TORRANCE-MAIN	U		2	2	69	2,062			
PERRY, C. G., OPERATOR									
TORRANCE-MAIN	U		1	1	24	720			
PERSEUS OIL COMPANY									
KERN RIVER	U	3	6	9	14	416			
PETERSON, CLARK C.									
HUNTINGTON BEACH-NORTH AREA-TAR BOLSA	U		1	1	5	161		28	
PETROLEUM COMPANY, THE									
COYOTE EAST-ANAHEIM	U		4	4	45	1,339		1,208	
PETROLEUM MIDWAY COMPANY									
TORRANCE-MAIN	U	1	2	3	5	159		100	
WILMINGTON-HARBOR-FB-IV-RANGER	U		2	2	18	534		170	
HARBOR-FBV-RANGER	U		1	1	5	140		50	
COMPANY TOTAL		1	5	6	28	833		320	
PETROLINE OIL COMPANY									
KERN RIVER	U		7	7	30	904			
PETTIJOHN, J. E.									
TORRANCE-MAIN	U		3	3	3	80		70	
DEL AMO	U	1		1					
YORBA LINDA-SMITH	U	1		1					
COMPANY TOTAL		2	3	5	3	80		70	
P. H. & B. OIL COMPANY									
NEWPORT WEST-MAIN AREA	U	4		4					
PLAYA DEL REY-VENICE AREA	U		12	12	149	4,467		1,768	
COMPANY TOTAL		4	12	16	149	4,467		1,768	
PHILLIPS, GORDON W.									
OJAI GROUP-LION MOUNTAIN EOCENE	U		3	3	11	329			
PHILLIPS PETROLEUM COMPANY									
WILMINGTON-HARBOR-FBV-TAR	S		1	1	13	396		79	
HARBOR-FBV-RANGER	U		32	32	448	13,449		15,013	
HARBOR-FB-VB-UPPER TERMINAL	S		2	2	45	1,354		1,516	

COMPANY FIELD, AREA OR POOL	CLASS	NUMBER OF WELLS: SHUT IN	NUMBER OF WELLS: PRODUCING	NUMBER OF WELLS: TOTAL	CRUDE PRODUCTION: BARRELS DAILY	CRUDE PRODUCTION: BARRELS	EXCESS OR SHORTAGE BARRELS	GAS PRODUCTION M.C.F	NO. WELLS COMP. ABD.
HARBOR-FB-IV-RANGER	U		62	62	1,717	51,515		71,614	
COMPANY TOTAL			97	97	2,223	66,714		88,222	
PHILLIPS-RAMSAY OIL CORPORATION									
ROSECRANS-ATHENS AREA-UPPER	U		1	1	5	147		375	
PICKARD-CORN									
LONG BEACH-OLD AREA-UPPER POOLS	U		2	2	18	548		405	
PICKRELL, D. J., & MEYER, E. W.									
WILMINGTON-HARBOR-FBV-RANGER	U		1	1	6	186		199	
PIERCE PETROLEUM CORPORATION, INC.									
LONG BEACH-OLD AREA-UPPER POOLS	U	1	1	2	16	466		338	
PIETZSCHKE, ED									
TORRANCE-DEL AMO	U		1	1	1	30		98	
PIRA, W. C., OIL OPERATOR									
HUNTINGTON BEACH-SOUTH ON-SHORE-MAIN	U		1	1	9	282			
P. K. & P. OIL COMPANY									
TEJON HILLS-S	U		1	1	2	75			
PLANET OIL CORPORATION									
ROSECRANS-ATHENS AREA-UPPER	U	1		1				74	
PLIOCENE OIL COMPANY									
MIDWAY SUNSET-MIDWAY WEST-UPPER	U	2	28	30	151	4,531			
PLMARD OIL COMPANY									
HUNTINGTON BEACH-NORTH AREA-ASHTON	U		1	1	4	110		3	
P. & M. OIL CO.									
HUNTINGTON BEACH-SOUTH ON-SHORE-MAIN	U		1	1	12	352			
POE, DE LOSSE									
EDISON-PORTALS-FAIRFAX AREA-WICKER	U		1	1	4	117			
PORT OIL COMPANY									
WILMINGTON-TOWN LOT-TAR-RANGER-TERMINAL	U		3	3	18	531			
PORTER, B. F., ESTATE									
ALISO CANYON-SESNON	S		3	3	102	3,075	195*	2,781	
POSTA, VICTOR W., OPERATOR									
NEWPORT WEST-ALDRICH AREA-B	U		2	2	53	1,583		1,050	
ALDRICH AREA-C	U	1		1					
MAIN AREA	U		2	2	41	1,220		1,100	1
COMPANY TOTAL		1	4	5	94	2,803		2,150	1
PRAY, MAX									
LONG BEACH-OLD AREA-DE SOTO SOUTH FLANK	U		1	1	18	541		457	
PRAY, MAX, & MORGAN, FRED									
LONG BEACH-OLD AREA-UPPER POOLS	U		1	1	6	191		64	

65499 O—55——20

COMPANY FIELD, AREA OR POOL	CLASS	NUMBER OF WELLS: SHUT IN	PRODUCING	TOTAL	CRUDE PRODUCTION: BARRELS DAILY	BARRELS	EXCESS OR SHORTAGE BARRELS	GAS PRODUCTION M.C.F	NO. WELLS COMP. ABD.
OLD AREA-DE SOTO SOUTH FLANK	U		1	1	40	1,197		1,632	
COMPANY TOTAL			2	2	46	1,388		1,696	
PRAY, MAX, & WALKER, ELISHA, JR.									
LONG BEACH-OLD AREA-DE SOTO SOUTH FLANK	U		1	1	21	620		514	
SANTA FE SPRINGS-OCONNELL SOUTHEAST	U		4	4	111	3,334		1,705	
OTHERS	U		1	1	3	78		90	
COMPANY TOTAL			6	6	135	4,032		2,309	
PRESIDENT OIL COMPANY									
HUNTINGTON BEACH-NORTH AREA-ASHTON	U		1	1	5	142		30	
PRESLEY, WATTENBARGER, & COOK									
EDISON-WEST AREA	U		3	3	66	1,993		210	
PRESZLER, EDWIN									
FRUITVALE-MARTIN-KERNCO	U		2	2	51	1,542			
PREUITT, G. H.									
MIDWAY-SUNSET-MIDWAY EAST-SHALLOW	U		2	2	11	330			
PRIMA OIL CORPORATION									
HUNTINGTON BEACH-SOUTH ON-SHORE-TAR	U	2	4	6	16	475			
PRINCETON OIL COMPANY									
MIDWAY SUNSET-MIDWAY WEST-UPPER	U	1	4	5	14	415		200	
PRODUCERS OIL CORPORATION OF AMERICA									
COALINGA-WESTSIDE AREA-TEMBLOR	U	2	41	43	132	3,954		100	
KERN RIVER	U	10	34	44	108	3,253			
COMPANY TOTAL		12	75	87	240	7,207		100	
PRODUCTION SECURITIES CORPORATION									
WILMINGTON-TOWN LOT-TAR-RANGER-TERMINAL	U		1	1	4	115			
PRODUCTION SERVICE COMPANY									
WHITTIER-RIDEOUT HEIGHTS AREA	U		1	1	12	363			
PROGRESSIVE OIL COMPANY									
LONG BEACH-OLD AREA-UPPER POOLS	U	5	9	14	112	3,366		4,285	
P. AND S. OIL COMPANY									
BELRIDGE SOUTH	U		10	10	49	1,468			
PUBLIC PETROLEUM COMPANY									
MCKITTRICK	U	2		2					
PYLES, E. E., OPERATOR									
COYOTE EAST-HUALDE	U		1	1	14	430		330	
PYRAMID OIL COMPANY									
MIDWAY-SUNSET-MIDWAY EAST-SHALLOW	U	5	10	15	72	2,147		1,303	
MIDWAY WEST-UPPER	U	1	7	8	25	736			
OJAI GROUP-SISAR-SILVERTHREAD	U	3	11	14	20	609			
COMPANY TOTAL		9	28	37	117	3,492		1,303	

COMPANY FIELD, AREA OR POOL	CLASS	NUMBER OF WELLS: SHUT IN	PRODUCING	TOTAL	CRUDE PRODUCTION: BARRELS DAILY	BARRELS	EXCESS OR SHORTAGE BARRELS	GAS PRODUCTION M.C.F	NO. WELLS: COMP. ABD.
OJAI GROUP-SISAR-SILVERTHREAD									
COMPANY TOTAL		9	28	37	117				
QUALITY OIL CORPORATION									
MIDWAY-SUNSET-MIDWAY EAST-SHALLOW	U	3	9	12	130	3,888		596	
MIDWAY WEST-QUALITY	U	3	26	29	252	7,563			
COMPANY TOTAL		6	35	41	382	11,451		596	
QUANDT, HENRY									
CYMRIC-WELPORT AREA-SHALLOW	U		2	2	11	329		35	
QUARTETTE OIL COMPANY									
HUNTINGTON BEACH SOUTH ON-SHORE-TAR	U	2	4	6	31	933			
QUINBY, P. D.									
MCKITTRICK	U	2	11	13	63	1,890			
RAAB, ALFRED AND MAUDE E.									
PLACERITA-JUANITA AREA	U		1	1	6	179			
RABUCHIN, BEN D., & WITTERT, WALTER									
PLACERITA-JUANITA AREA	U		1	1	4	114			
RAE OIL COMPANY									
PLACERITA-OLD AREA	U		11	11	96	2,895			
RAEHN, EMMETT J.									
HUNTINGTON BEACH-HUNTINGTON AVE-JONES	S		1	1	16	480	190	450	1
RAINBOW OIL COMPANY									
TEJON HILLS-S	U		12	12	59	1,778			
RALEIGH OIL COMPANY									
WILMINGTON-TOWN LOT-TAR-RANGER-TERMINAL	U		2	2	37	1,109			
RAMCO									
MCKITTRICK	U	5	4	9	32	967		95	
RAMSER, HAROLD C.									
HUNTINGTON BEACH-NORTH AREA-ASHTON	U	1	1	2	5	150			
NEWPORT WEST-ALDRICH AREA-B	U	2		2					
YORBA LINDA-SHALLOW	U	2		2					1
SMITH	U	1	10	11	62	1,850			
COMPANY TOTAL		6	11	17	67	2,000			1
RAY OIL COMPANY									
HUNTINGTON BEACH-SOUTH ON-SHORE-MAIN	U		1	1	8	248		784	
REA, C. C.									
ROSECRANS-ATHENS AREA-LOWER	U		1	1	4	121		226	
READING OIL CORPORATION									
HUNTINGTON BEACH-SOUTH OFF-SHORE-MAIN	U		1	1	85	2,557		885	
RECKNAGEL & MANGOLD OIL COMPANY									
PLACERITA-JUANITA AREA	U		1	1	15	450			
OLD AREA	U		2	2	11	342			

COMPANY FIELD, AREA OR POOL	CLASS	NUMBER OF WELLS: SHUT IN	PRODUCING	TOTAL	CRUDE PRODUCTION: BARRELS DAILY	BARRELS	EXCESS OR SHORTAGE BARRELS	GAS PRODUCTION M.C.F	NO. WELLS COMP ABD.
LONG BEACH-OLD AREA-UPPER POOLS	U		1	1	4	135			
WILMINGTON-HARBOR-FB-IV-RANGER	U		1	1	11	317			
TOWN LOT-TAR-RANGER-TERMINAL	U		3	3	15	465			
COMPANY TOTAL			8	8	56	1,709			
RED STAR OIL COMPANY									
EDISON-WEST AREA	U		2	2	4	134			
HUNTINGTON BEACH-HUNTINGTON AVE-JONES	S		1	1	57	1,720	1,024	1,700	1
NORTH AREA-TAR BOLSA	U	1	2	3	13	395			
NORTH AREA-ASHTON	U		1	1	3	80			
NEWPORT WEST-ALDRICH AREA-B	U		2	2	38	1,137		334	
SURF AREA-EAST BLOCK	U		1	1	17	504			
COMPANY TOTAL		1	9	10	132	3,970	1,024	2,034	1
REID, GENE, DRILLING, INC.									
EDISON-MAIN AREA-UPPER	U		2	2	21	616			
PORTALS-FAIRFAX AREA-WICKER	U		3	3	22	655			
FRUITVALE-MARTIN-KERNCO	U		3	3	50	1,491			
KERN BLUFF	U		19	19	132	3,956			
MIDWAY-SUNSET-MIDWAY EAST-SHALLOW	U	1	10	11	39	1,178			
MIDWAY WEST-UPPER	U	4	14	18	44	1,323		500	
COMPANY TOTAL		5	51	56	308	9,219		500	
RENNER, WILVIAN JEWELL									
HUNTINGTON BEACH-NORTH AREA-ASHTON	U		1	1	13	389		422	
RESERVE OIL & GAS COMPANY									
PYRAMID HILLS-ORCHARD	U	2		2					
TEJON GRAPEVINE-CENTRAL AREA-TRANSITION	S		8	8	357	10,724		3,911	
CENTRAL AREA-S-P	U	6	6	12	89	2,670		543	
CENTRAL AREA-RESERVE	U		4	4	115	3,452		840	
CENTRAL AREA-V	U	1	7	8	298	8,953		11,032	
CENTRAL AREA-OLCESE	S		17	17	2,761	82,819	2,496*	54,650	1
CENTRAL AREA-J.V.	S		2	2	382	11,465	35*	7,407	1
COMPANY TOTAL		9	44	53	4,002	120,083	2,531*	78,383	2
RESERVE OIL & GAS COMPANY#									
TEJON HILLS-S	U		5	5	37	1,119		345	
V	U		6	6	228	6,837		3,845	
T	U		2	2	30	913		600	
COMPANY TOTAL			13	13	295	8,869		4,790	
REVO OIL COMPANY									
HUNTINGTON BEACH-SOUTH ON-SHORE-TAR ZONE	U		1	1	10	308			
REX OIL COMPANY									
ROUND MOUNTAIN GROUP-COFFEE CANYON-VEDDER	U	1	2	3	9	259			

COMPANY FIELD, AREA OR POOL	CLASS	NUMBER OF WELLS: SHUT IN	PRODUCING	TOTAL	CRUDE PRODUCTION: BARRELS DAILY	BARRELS	EXCESS OR SHORTAGE BARRELS	GAS PRODUCTION M.C.F	NO. WELLS COMP ABD.
REX OIL COMPANY									
ROUND MOUNTAIN GROUP-COFFEE CANYON-VEDDERU	1	2	3	9	259				
HUNTINGTON BEACH-NORTH AREA-ASHTON	U	2	11	13	116	3,477		3,614	
COMPANY TOTAL		3	13	16	125	3,736		3,614	
REYNOLDS, ROBERT F.									
SANTA PAULA GRP-SANTA PAULA CANYON	U	1		1					
RHEEM, RICHARD S., OPERATOR									
EDISON-JEPPI	U		1	1	27	801		1,503	1
RHOADS, ROY M.									
OTHER FIELDS-DEER CREEK	U	1		1					
RHOADS, SAM F.									
HUNTINGTON BEACH-SOUTH ON-SHORE-TAR	U	2	1	3	1	32			
RICE RANCH OIL COMPANY									
ORCUTT	U	7	23	30	237	7,114		15,652	
RICHARDS OIL COMPANY									
KERN RIVER	U	3	7	10	15	459			
RICHFIELD OIL CORPORATION									
BELRIDGE NORTH-R SAND	S		2	2	47	1,407		33,253	
COLES LEVEE N-RICHFIELD WESTERN-21-1	S	4	25	29	1,691	50,734	3,266*	364,070	
RICHFIELD WESTERN-W. 29	S	1	21	22	1,061	31,844	194	203,922	
RICHFIELD W.-MAIN WESTERN	S	9	95	104	13,157	394,722	8,939*	2604,255	
RICHFIELD WESTERN-68-29	U	1	1	2	61	1,840		1,904	
RICHFIELD WESTERN-67-29	U		1	1	16	471		782	
CUYAMA CENTRAL	U		1	1	15	457		274	
CUYAMA SOUTH-MAIN AREA-52-1	S	1	1	2	54	1,628	772*	600	
MAIN AREA-JOHNSTON	U	1		1					
MAIN AREA-HIBBERD	U		15	15	766	22,979		6,848	
SOUTHEAST AREA-COX	U	1	1	2	12	351		27	
MORALES CANYON-CLAYTON	U		1	1	6	167		165	
GOVERNMENT 18	U		5	5	131	3,921		4,810	
RUSSELL RANCH-MAIN AREA-138-5	U		1	1	12	361		8	
MAIN AREA-SLOAN	U		8	8	84	2,527		2,100	
MAIN AREA-RUSSELL 15-9	U	1	10	11	213	6,393		5,731	
MAIN AREA-COLGROVE NORTH	U		6	6	128	3,835		3,948	
MAIN AREA-COLGROVE SOUTH	U	1	17	18	427	12,810		5,190	
NORRIS AREA-NORRIS	U		2	2	5	162		88	
NORRIS-GRIGGS DIBBLEE	U		3	3	12	350		204	
EDISON-WEST AREA	U		2	2	19	558		180	
EDISON GROVES AREA-SHIELDS ARMS	U		6	6	113	3,380		613	
KERN FRONT	U	2	26	28	254	7,624		658	
LOS LOBOS-18-21	U		9	9	338	10,135		2,076	

COMPANY FIELD, AREA OR POOL	CLASS	NUMBER OF WELLS			CRUDE PRODUCTION		EXCESS OR SHORTAGE BARRELS	GAS PRODUCTION M.C.F	NO. WELLS COMP. ABD.
		SHUT IN	PRODUCING	TOTAL	BARRELS DAILY	BARRELS			
LOS LOBOS-27-2C	S	1	8	9	862	25,367	2,150	21,896	
LOST HILLS-MAIN	U	2	15	17	59	1,763		224	
WILLIAMSON	U		7	7	40	1,213		1,211	
G-1	U		3	3	34	1,020		214	
COHN	U		1	1	14	414		325	
CYMRIC-SALT CREEK WEST AREA-CARNEROS	U		1	1	27	820		243	
MIDWAY-SUNSET-MIDWAY EAST-SHALLOW	U	8	14	22	52	1,566		2,871	
MIDWAY WEST-UPPER	U	122	21	143	407	12,214		2,282	
SANTIAGO-LEUTHOLTZ	S		16	16	646	19,389	201*	43,007	
PALOMA-MAIN AREA-PALOMA CRUDE OIL	S	2	5	7	28	835		17,116	
TEJON GRAPEVINE-CENTRAL AREA-S-P	U		4	4	44	1,307		580	
CENTRAL AREA-OLCESE	S		1	1	24	723	123	1,420	
EASTERN AREA	U	1	18	19	132	3,957		710	
WESTERN AREA-S	U		4	4	13	396			
WHEELER RIDGE-COAL OIL CANYON	U		23	23	355	10,656		2,965	
MAIN	U		2	2	10	312			
424-28	S		2	2	153	4,597	579	3,234	
GORDON	S		9	9	683	20,503	347*	15,825	
276-29	U		4	4	70	2,093		15,690	
EOCENE	S		17	17	4,315	129,449	10,886	231,958	
RB2	U		1	1	41	1,222		2,326	
OTHER FIELDS-TURK ANTICLINE	U		1	1	3	81		2,393	
CASTAIC HILLS-STERLING	S		22	22	1,276	38,293		97,102	
RYNNE-FISHER	S		1	1	161	4,831	331	6,377	
OJAI GROUP-SISAR-SILVERTHREAD	U	7	20	27	39	1,175			
SULPHUR MOUNTAIN NORTH	U	19	4	23	76	2,295		1,674	
SANTA PAULA GRP-TIMBER CANYON-MAIN	U		20	20	851	25,535		29,045	
TIM. CAN. LOEL MAXWELL	S		1	1	34	1,026	276	984	
CASMALIA-[illegible]SQUOC-MONTEREY	U	17	13	30	915	27,447			
RINCON-MAIN AREA-HOBSON TOMSON-MILEY	U		12	12	249	7,456		7,384	
MAIN AREA-C-9	U		3	3	174	5,234		6,005	
EAST LOS ANGELES	U		18	18	620	18,611		23,917	
EL SEGUNDO	U		1	1	41	1,231		576	
HUNTINGTON BEACH-NORTH AREA-TAR ROLSA	U		1	1	11	323		29	
NORTH AREA-ASHTON	U		4	4	51	1,532		691	
LONG BEACH-OLD AREA-UPPER POOLS	U	6	95	101	1,809	54,285		48,818	
OLD AREA-CIRCLE	U		1	1	41	1,243		1,456	
NORTHWEST EXTENSION AREA	U		3	3	82	2,474		764	
SANTA FE SPRINGS-OTHERS	U		3	3	56	1,684		2,002	

COMPANY FIELD, AREA OR POOL	CLASS	NUMBER OF WELLS			CRUDE PRODUCTION		EXCESS OR SHORTAGE BARRELS	GAS PRODUCTION M.C.F	NO. WELLS COMP ABD.
		SHUT IN	PRODUCING	TOTAL	BARRELS DAILY	BARRELS			
SANTA FE SPRINGS-OTHERS	U		3	3	56	1,684		2,002	

COMPANY FIELD, AREA OR POOL	CLASS	NUMBER OF WELLS			CRUDE PRODUCTION		EXCESS OR SHORTAGE BARRELS	GAS PRODUCTION M.C.F	NO. WELLS COMP ABD.
		SHUT IN	PRODUCING	TOTAL	BARRELS DAILY	BARRELS			
WILMINGTON-HARBOR-FB-IV-TAR	U	3	3	6	44	1,335		1,364	
HARBOR-FB-IV-RANGER	U	5	29	34	522	15,670		19,582	
HARBOR-FB-IV-TERMINAL U&L	U	1	7	8	105	3,140		2,518	
HARBOR-FB-IVAB-FORD	U		1	1	3	90		19	
HARBOR-FBV-RANGER	U		8	8	57	1,714		1,821	
COMPANY TOTAL		216	706	922	33,851	1015,677	1,014	3860,324	
RICHFIELD OIL CORPORATION#									
ELWOOD-VAQUEROS	U		3	3	66	1,993		2,183	
SESPE	U		1	1	14	424		413	
GATO RIDGE-TOGNAZZINI	S	2	8	10	665	19,958	4,606	6,856	
COMPANY TOTAL		2	12	14	745	22,375	4,606	9,452	
RICHLAND OIL COMPANY									
LONG BEACH-OLD AREA-UPPER POOLS	U		1	1	8	255		62	
RICO PETROLEUM, INCORPORATED									
LONG BEACH-OLD AREA-UPPER POOLS	U		1	1	9	259		221	
RIDGE HILL OIL COMPANY									
TEJON GRAPEVINE-CENTRAL AREA-S-P	U		8	8	30	900		1,737	
CENTRAL AREA-OLCESE	S		1	1	231	6,930	3,180	13,908	
SANTA FE SPRINGS-OTHERS	U		3	3	119	3,575		6,429	
COMPANY TOTAL			12	12	380	11,405	3,180	22,074	
RIDGEWAY-TAYLOR OIL COMPANY									
WILMINGTON-TOWN LOT-TAR-RANGER-TERMINAL	U		2	2	32	972		294	
RING, GEORGE W. & FRANK L.									
MOUNT POSO GROUP-SECTION 18-VEDDER	U	2	13	15	246	7,392			
RING OIL COMPANY									
EDISON-WEST AREA	U	1	28	29	246	7,380			
MOUNT POSO GROUP-DOMINION-VEDDER	U		12	12	69	2,070			
MOUNT POSO-VEDDER	U	6	83	89	960	28,804			1
SECTION 18-VEDDER	U	3	12	15	115	3,449			
ROUND MOUNTAIN GROUP-SHARKTOOTH-VEDDER	U		11	11	63	1,890			
HUNTINGTON BEACH-NORTH AREA-ASHTON	U	1		1					
LONG BEACH-OLD AREA-UPPER POOLS	U		2	2	14	417		223	
SANTA FE SPRINGS-OTHERS	U		5	5	100	3,009		1,626	
TORRANCE-MAIN	U		1	1	8	227		311	
DEL AMO	U	2	2	4	20	607		578	
WILMINGTON-TOWN LOT-TAR-RANGER-TERMINAL	U		6	6	78	2,348		1,891	
TOWN LOT-FORD	U		1	1	19	577		433	
COMPANY TOTAL		13	163	176	1,692	50,778		5,062	1
RIOKERN OIL COMPANY									
KERN RIVER	U	1	24	25	25	737			4

COMPANY FIELD, AREA OR POOL	CLASS	NUMBER OF WELLS: SHUT IN	PRODUCING	TOTAL	CRUDE PRODUCTION: BARRELS DAILY	BARRELS	EXCESS OR SHORTAGE BARRELS	GAS PRODUCTION M.C.F	NO. WELLS COMP ABD.
RIPPY, CHAS. T., & ROBINETT, EARL									
TORRANCE-MAIN	U	3	3	6	20	606		618	
DEL AMO	U		2	2	17	505		422	
COMPANY TOTAL		3	5	8	37	1,111		1,040	
RIVIERA PETROLEUM COMPANY									
TORRANCE-DEL AMO	U		1	1	7	225		249	
ROBERTSON, W. C.									
MCKITTRICK	U	2	2	4	2	70			
ROBINETT, EARL									
TORRANCE-MAIN	U	1	2	3	13	387		125	
ROBINETT, LILLIAN B., ET AL.									
TORRANCE-MAIN	U	2	1	3	19	570		393	
ROBINSON ASSOCIATES									
HUNTINGTON BEACH-SOUTH ON-SHORE-MAIN	U		1	1	35	1,037			
ROBINSON, C. RAY, OPERATOR									
MIDWAY SUNSET-SANTIAGO-METSON	U	3		3					
RODABAUGH, C. O.									
TORRANCE-MAIN	U		1	1	10	305		377	
DEL AMO	U		1	1	3	102		244	
COMPANY TOTAL			2	2	13	407		621	
RODABAUGH, C. O. & L. M.									
TORRANCE-MAIN	U		1	1	3	105		45	
DEL AMO	U		1	1	5	150		165	
COMPANY TOTAL			2	2	8	255		210	
RODEO OIL CO., INC.									
DEVILS DEN-MAIN	U		12	12	7	220			
RODGERS OIL COMPANY									
HUNTINGTON BEACH-NORTH AREA-TAR BOLSA	U		1	1	8	249			
RORABAUGH, JOHNNIE & RUTH									
HUNTINGTON BEACH-NORTH AREA-ASHTON	U		1	1	7	210		158	
ROSS, T. G.									
SANTA BARBARA-VAQUEROS	U	1		1					
ROTHSCHILD, HARRY, & KEBOW, JOSEPHINE									
SANTA FE SPRINGS-OTHERS	U		1	1	6	185		1,132	
ROTHSCHILD, HARRY S.									
SANTA FE SPRINGS-OTHERS	U		1	1	7	219		667	
ROTHSCHILD, JOHN A. & DOROTHY JEAN									
EDISON-MAIN AREA-UPPER	U		1	1	2	67			
WILMINGTON-HARBOR-FBV-RANGER	U		1	1	6	178		166	
COMPANY TOTAL			2	2	8	245		166	

COMPANY FIELD, AREA OR POOL	CLASS	NUMBER OF WELLS			CRUDE PRODUCTION		EXCESS OR SHORTAGE BARRELS	GAS PRODUCTION M.C.F	NO. WELLS
		SHUT IN	PRODUCING	TOTAL	BARRELS DAILY	BARRELS			COMP ABD
ROTHSCHILD OIL COMPANY									
EDISON-WEST AREA	U	1	23	24	311	9,333		70	
PLACERITA-JUANITA AREA	U	3	29	32	495	14,844			
HUNTINGTON BEACH-HUNTINGTON AVE-JONES	S		3	3	246	7,386	426	8,564	1
LONG BEACH-OLD AREA-UPPER POOLS	U	1	8	9	109	3,271		2,728	
MONTEBELLO-MAIN AREA-BALDWIN 1-2-3	U	1	4	5	25	757			
SANTA FE SPRINGS-OCONNELL SOUTHEAST	U		1	1	11	330			
OTHERS	U	2	9	11	189	5,684		15,255	
WILMINGTON-HARBOR-FB-IV-TERMINAL U&L	U		2	2	40	1,203		740	
HARBOR-FB-VA-TERMINAL U&L	U		1	1	12	347			
COMPANY TOTAL		8	80	88	1,438	43,155	426	27,357	1
ROUSE, GAYLOR									
HUNTINGTON BEACH-NORTH AREA-TAR BOLSA	U	1		1					
ROUSE AND LINN									
HUNTINGTON BEACH-SOUTH ON-SHORE-TAR	U		1	1	6	176			
ROUTH, JAMES N., OPERATOR									
TORRANCE-MAIN	U		1	1	6	195			
ROWAN, GEORGE D., OPERATOR									
NEWHALL GROUP-TOWNSITE	U	1		1					
PLACERITA-OLD AREA	U	1	9	10	93	2,787			
COMPANY TOTAL		2	9	11	93	2,787			
ROYAL PETROLEUM COMPANY									
HUNTINGTON BEACH-NORTH AREA-ASHTON	U	1	3	4	67	2,016		1,053	
TORRANCE-MAIN	U		17	17	133	3,989		500	
COMPANY TOTAL		1	20	21	200	6,005		1,553	
ROYALTY SERVICE CORPORATION, LTD.									
COYOTE EAST-ANAHEIM	U		1	1	5	165		24	
HUNTINGTON BEACH-SOUTH ON-SHORE-TAR	U		2	2	17	525		52	
LONG BEACH-OLD AREA-UPPER POOLS	U		4	4	90	2,703		1,487	
OLD AREA-WARDLOW	U		1	1	8	226		950	
ROSECRANS-MAIN AREA-O DEA	U	1	1	2	26	773		262	
MAIN AREA-8TH	U		1	1	9	283		693	
SOUTH AREA-O DEA	U		5	5	84	2,514		2,840	
SOUTH AREA-8TH	U		1	1	9	270		626	
WILMINGTON-HARBOR-FB-IV-TERMINAL U&L	U		1	1	30	900		216	
TOWN LOT-TAR-RANGER-TERMINAL	U		72	72	1,340	40,189		24,794	
TOWN LOT-FORD	U		5	5	81	2,416		2,022	
COMPANY TOTAL		1	94	95	1,699	50,964		33,966	
ROYDEN, H. N., & ASSOCIATES									
MIDWAY-SUNSET-MIDWAY EAST-SHALLOW	U	1	1	2	7	215			

COMPANY FIELD, AREA OR POOL	CLASS	NUMBER OF WELLS			CRUDE PRODUCTION		EXCESS OR SHORTAGE BARRELS	GAS PRODUCTION M.C.F	NO. WELLS	
		SHUT IN	PRODUCING	TOTAL	BARRELS DAILY	BARRELS			COMP	ABD.
RUBBERT, C. E.										
FRUITVALE-MARTIN-KERNCO	U	1	8	9	78	2,342				
KERN RIVER	U		24	24	23	705				
COMPANY TOTAL		1	32	33	101	3,047				
RUBIN OIL COMPANY										
HUNTINGTON BEACH-NORTH AREA-ASHTON	U		2	2	13	404		392		
RUCHTI OIL CO., INC.										
HUNTINGTON BEACH-SOUTH OFF-SHORE-MAIN	U		1	1	86	2,569		261		
TORRANCE-MAIN	U		3	3	29	857		337		
COMPANY TOTAL			4	4	115	3,426		598		
RUSH, J. D., & GOLDMAN, FRANK										
ROUND MOUNTAIN GROUP-SHARKTOOTH-VEDDER	U	6	2	8	9	275				
RUSH & JORDAN										
ROSECRANS-MAIN AREA-MAXWELL-HOGE	U		1	1	5	145		142		
RUSHING, A. D., INC.										
OJAI GROUP-LION MOUNTAIN EOCENE	U		3	3	27	821				
OAK VIEW	U		1	1	6	169			1	
COMPANY TOTAL			4	4	33	990			1	
RUSSELL, G. M.										
ROSECRANS-ATHENS AREA-UPPER	U		2	2	2	73		271		
ATHENS AREA-LOWER	U		1	1	6	183		307		
ATHENS AREA-O DEA	U		2	2	42	1,260		903		
COMPANY TOTAL			5	5	50	1,516		1,481		
RUSSELL & RUSSELL										
ROSECRANS-ATHENS AREA-UPPER	U		1	1	10	299		325		
ATHENS AREA-LOWER	U		1	1	3	92		347		
COMPANY TOTAL			2	2	13	391		672		
RUSSELL, R. W.										
ROSECRANS-ATHENS AREA-UPPER	U		1	1	4	109		257		
ATHENS AREA-LOWER	U		3	3	8	250		376		
COMPANY TOTAL			4	4	12	359		633		
RUSSELL, THELMA										
TORRANCE-MAIN	U		1	1	3	90		204		
DEL AMO	U		1	1	14	435		132		
COMPANY TOTAL			2	2	17	525		336		
R. & W. COMPANY										
MIDWAY-SUNSET-MIDWAY EAST-SHALLOW	U		2	2	16	487				
SABRE OIL COMPANY										
HUNTINGTON BEACH-HUNTINGTON AVE-JONES	S		1	1	93	2,790	210*	8,504		

COMPANY FIELD, AREA OR POOL	CLASS	NUMBER OF WELLS SHUT IN	PRODUCING	TOTAL	CRUDE PRODUCTION BARRELS DAILY	BARRELS	EXCESS OR SHORTAGE BARRELS	GAS PRODUCTION M.C.F	NO. WELLS COMP ABD.
HUNTINGTON BEACH-HUNTINGTON AVE-JONES	S		1	1	93	2,790	210*	8,504	

COMPANY FIELD, AREA OR POOL	CLASS	NUMBER OF WELLS SHUT IN	PRODUCING	TOTAL	CRUDE PRODUCTION BARRELS DAILY	BARRELS	EXCESS OR SHORTAGE BARRELS	GAS PRODUCTION M.C.F	NO. WELLS COMP ABD.
SAFE OIL COMPANY									
MIDWAY SUNSET-MIDWAY WEST-UPPER	U		8	8	96	2,886		500	
SAFEWAY OIL COMPANY									
LONG BEACH-OLD AREA-UPPER POOLS	U		3	3	34	1,026		647	
SAILORS LEASE									
KERN RIVER	U	6	13	19	52	1,553			
ST. ANTHONY OIL CORPORATION									
ROSECRANS-SOUTH AREA-O DEA	U		4	4	70	2,108		1,369	
SOUTH AREA-8TH	U		3	3	75	2,261		1,469	
SANTA FE SPRINGS-OTHERS	U		29	29	1,256	37,675		9,206	
WILMINGTON-TOWN LOT-TAR-RANGER-TERMINAL	U		1	1	8	235			
COMPANY TOTAL			37	37	1,409	42,279		12,044	
ST. FRANCIS OIL COMPANY									
TORRANCE-MAIN	U		4	4	44	1,312			
ST. LAWRENCE OIL COMPANY									
MIDWAY-SUNSET-MIDWAY EAST-SHALLOW	U	2	8	10	39	1,156		794	
SAN ANDRES OIL COMPANY, INC.									
LONG BEACH-OLD AREA-UPPER POOLS	U		1	1	8	253		87	
SAN JOAQUIN EXPLORATION CO.									
MCDONALD ANTICLINE-LAYMAN AREA	U		4	4	4	130			
SAN MARINO OIL COMPANY									
BARDSDALE-SESPE	U	3	15	18	94	2,813		11,360	
EOCENE	U		5	5	100	3,002		18,024	
COMPANY TOTAL		3	20	23	194	5,815		29,384	
SANTA FE DRILLING COMPANY									
FRESNO GROUP-CAMDEN	U		1	1	24	719		1,500	
SANTA MARIA CRUDE OIL COMPANY									
OJAI GROUP-SISAR-SILVERTHREAD	U		2	2	11	322		15	
SANTA PAULA DRILLING & DEVELOPMENT CO.									
SANTA PAULA GRP-TIMBER CANYON-MAIN	U		1	1	1	20			
SARGENT, W. J.									
TORRANCE-DEL AMO	U		1	1	13	399		148	
S. & B. OIL CO. INC.									
TORRANCE-MAIN	U	1		1					
WILMINGTON-TOWN LOT-TAR-RANGER-TERMINAL	U		2	2	22	648			
COMPANY TOTAL		1	2	3	22	648			
SCHONES, JESSE R.									
PLAYA DEL REY-VENICE AREA	U		5	5	36	1,073		381	
SCOTT, WALTER J.									
LONG BEACH-OLD AREA-UPPER POOLS	U	1	9	10	77	2,300		2,342	

COMPANY FIELD, AREA OR POOL	CLASS	NUMBER OF WELLS: SHUT IN	PRODUCING	TOTAL	CRUDE PRODUCTION: BARRELS DAILY	BARRELS	EXCESS OR SHORTAGE BARRELS	GAS PRODUCTION M.C.F	NO. WELLS: COMP	ABD.
SEABOARD OIL COMPANY										
CASTAIC HILLS-STERLING	S		1	1	31	943		3,149		
LAWNDALE-UPPER POOL	U	1		1						
JOHNSON	U		4	4	135	4,049		4,649		
COMPANY TOTAL		1	5	6	166	4,992		7,798		
SEABOARD OIL COMPANY #										
FRESNO GROUP-RAISIN CITY-TAR-MIOCENE	U		3	3	85	2,540		1,178		
RAISIN CITY-MIOCENE	U	2	3	5	91	2,738		842		
RAISIN CITY-EOCENE	U		3	3	135	4,063		1,741		
COMPANY TOTAL		2	9	11	311	9,341		3,761		
SEA SHORE OIL CORPORATION										
WILMINGTON-TERMINAL-FB-I-TAR-RGR-TERM	U	1	7	8	152	4,563		950		
SECOND TWIN BELL SYNDICATE & TWIN BELL OIL SYNDICATE										
SANTA FE SPRINGS-OTHERS	U	1	3	4	82	2,458		5,965		
SECTION THIRTY OIL COMPANY										
COALINGA-WESTSIDE AREA-TEMBLOR	U		35	35	270	8,114				
SECUNDA OIL CORPORATION										
TORRANCE-MAIN	U	1	4	5	33	989		618		
DEL AMO	U		1	1	5	137		90		
COMPANY TOTAL		1	5	6	38	1,126		708		
SECURITY OIL COMPANY										
LOST HILLS-MAIN	U		11	11	37	1,099				
SEFTON, W. H., & ASSOCIATES										
ROSECRANS-MAIN AREA-MAXWELL-HOGE	U	1	1	2	4	128		99		
SOUTH AREA-O DEA	U	1		1						
COMPANY TOTAL		2	1	3	4	128		99		
SEFTON, W. H.										
ROSECRANS-MAIN AREA-ZINS	U		1	1	5	138		373		
SOUTH AREA-ZINS	U		2	2	20	603		1,719		
COMPANY TOTAL			3	3	25	741		2,092		
SEGURO PETROLEUM COMPANY										
NEWPORT WEST-ANAHEIM SUGAR AREA	U		1	1	4	118		15		
SELBAR OIL CO.										
LONG BEACH-OLD AREA-UPPER POOLS	U	2	3	5	22	657		393		
SELEGNA PETROLEUM CORPORATION										
WILMINGTON-TOWN LOT-TAR-RANGER-TERMINAL	U		10	10	206	6,179		2,621		
SENECA OIL COMPANY										
COALINGA-WESTSIDE AREA-TEMBLOR	U		9	9	32	960		550		

COMPANY FIELD, AREA OR POOL	CLASS	NUMBER OF WELLS: SHUT IN	PRODUCING	TOTAL	CRUDE PRODUCTION: BARRELS DAILY	BARRELS	EXCESS OR SHORTAGE BARRELS	GAS PRODUCTION M.C.F	NO. WELLS: COMP	ABD.
SENTINEL OIL COMPANY, LTD.										
KERN FRONT	U	1	1	2	1	45		1	1	
SEQUOIA OIL COMPANY										
LONG BEACH-OLD AREA-UPPER POOLS	U		2	2	17	497		1,272		
SESNON, PORTER, CARTAN, BARBARA SESNON, & SESNON, WM. T., JR. TENANTS IN COMMON										
ALISO CANYON-SESNON	S		6	6	780	23,391	1,179*	14,594		
HORSE MEADOWS	U		1	1	18	532		441		
COMPANY TOTAL			7	7	798	23,923	1,179*	15,035		
SEVERNS & DEWITT										
COYOTE EAST-ANAHEIM	U		1	1	6	167		150		
SEVERNS DRILLING COMPANY, LTD.										
COYOTE EAST-HUALDE	U		2	2	29	877		1,089		
ANAHEIM	U		8	8	24	715		1,592		
MIOCENE A	U		5	5	52	1,555		1,873		
MAIN	U		1	1	2	57		49		
99	U		2	2	10	311		98		
EMERY WEST	U		3	3	54	1,606		1,370		
MCNALLY	U		1	1	15	453		603		
COMPANY TOTAL			22	22	186	5,574		6,674		
SEXTETTE-JULIEN										
HUNTINGTON BEACH-NORTH AREA-TAR BOLSA	U		1	1	13	405				
SHAFFER, CHARLES D. & G. RONALD										
HUNTINGTON BEACH-SOUTH ON-SHORE-TAR	U		3	3	18	550				
SHAFFER TOOL WORKS										
PLACERITA-JUANITA AREA	U		1	1	24	725				
HUNTINGTON BEACH-SOUTH ON-SHORE-TAR ZONE	U		2	2	9	275				
COMPANY TOTAL			3	3	33	1,000				
SHAMLIN, E. A.										
HUNTINGTON BEACH-HUNTINGTON AVE-JONES	S		6	6	522	15,654	3,765	16,000	3	
TORRANCE-TAR-RANGER	U	1		1						
MAIN	U	2	4	6	56	1,692		207		
COMPANY TOTAL		3	10	13	578	17,346	3,765	16,207	3	
SHASTA-PAN OIL COMPANY										
LONG BEACH-OLD AREA-UPPER POOLS	U		1	1	18	540		315		
SHAW OIL COMPANY										
HUNTINGTON BEACH-NORTH AREA-TAR BOLSA	U		2	2	40	1,200		371		
NORTH AREA-ASHTON	U		2	2	42	1,260		1,228		

COMPANY FIELD, AREA OR POOL	CLASS	NUMBER OF WELLS: SHUT IN	PRODUCING	TOTAL	CRUDE PRODUCTION: BARRELS DAILY	BARRELS	EXCESS OR SHORTAGE BARRELS	GAS PRODUCTION M.C.F	NO. WELLS COMP ABD.
SOUTH ON-SHORE-TAR	U		1	1	7	200			
SOUTH ON-SHORE-A-37	U	1		1					
SOUTH ON-SHORE-MAIN	U	1		1					
COMPANY TOTAL		2	5	7	89	2,660		1,599	
SHEEHY, KENNETH, ESTATE OF									
SANTA MARIA VALLEY-MAIN	U		1	1	7	200			
SHELDON, B. H.									
HUNTINGTON BEACH-HUNTINGTON AVE-JONES	S		1	1	17	513	107	866	1
SHELL, J. C., OPERATOR									
BLACKWELLS CORNER-TEMBLOR	U	2	20	22	51	1,524		340	
SHELL OIL COMPANY									
ANT HILL-OLCESE	U		1	1	11	325			
ANTELOPE HILLS-EAST BLOCK	S	1	5	6	299	8,965	999	3,398	
WEST BLOCK	S	3	19	22	440	13,192	85	21,405	
PHACOIDES	U		2	2	8	241			
EOCENE	U		5	5	94	2,815			
NORTH	U		16	16	559	16,782		1,905	
BELRIDGE SOUTH	U	11	31	42	164	4,915			
CANAL-STEVENS	S	5	14	19	501	15,034	279*	88,807	
COALINGA-EASTSIDE AREA-TEMBLOR	U	203	330	533	5,856	175,683		6,441	
EDISON-RACE TRACK-PORTALS-BERRY & CHANAC	U		3	3	25	739			
RACE TRACK HILL-JEWETT	S		3	3	79	2,362		4,270	
RACE TRACK HILL-PYRAMID HILL	S		22	22	1,123	33,701	4,645	62,103	
RACE TRACK HILL-VEDDER	S		1	1	108	3,241	781	11,860	
FRESNO GROUP-RAISIN CITY-MIOCENE	U	3	11	14	351	10,524		3,200	
KERN BLUFF	U		11	11	65	1,963			
KERN FRONT	U	3	23	26	233	7,004			
KERN RIVER	U	1	22	23	82	2,458			
BELGIAN ANTICLINE-N W-PT OF ROCKS 3RD	U	1		1					
R K-PT OF ROCKS 3RD	U	1		1					
MIDWAY SUNSET-MIDWAY WEST-UPPER	U	35	116	151	1,282	38,451		3,550	
MIDWAY WEST-QUALITY	U		3	3	81	2,430			
MIDWAY WEST-REPUBLIC	U		11	11	188	5,643		2,350	
MOUNT POSO GROUP-MOUNT POSO-VEDDER	U	1	133	134	3,172	95,162		3,012	
MOUNTAIN VIEW-MAIN AREA-OTHERS	U		5	5	36	1,070		404	
ROUND MT. GROUP-COFFEE CANYON-VEDDER	U	1	17	18	204	6,112			
PYRAMID-VEDDER	U		2	2	21	628			
ROUND MOUNTAIN-JEWETT	U	2	38	40	277	8,311			
ROUND MOUNTAIN-VEDDER	U	2	42	44	762	22,851			

COMPANY FIELD, AREA OR POOL	CLASS	NUMBER OF WELLS: SHUT IN	PRODUCING	TOTAL	CRUDE PRODUCTION: BARRELS DAILY	BARRELS	EXCESS OR SHORTAGE BARRELS	GAS PRODUCTION M.C.F	NO WELLS COMP ABD.
STRAND-STEVENS UPPER	U	1							
STEVENS LOWER	U		2	2	6	190		426	
TEN SECTION-STEVENS	S	21	102	123	4,507	135,218	30,368	191,458	
53	U		7	7	105	3,163		3,276	
CAPITAN-VAQUEROS	U	1	22	23	290	8,702		5,289	
ERBURU	U	5	8	13	43	1,278		24,737	
COVARRUBIAS	U		15	15	367	11,014		4,593	
COLDWATER	U		1	1	4	119		169	
BARDSDALE-EOCENE	U		2	2	31	916		5,566	
SOUTH MOUNTAIN-SESPE	U	2	127	129	7,682	230,449		331,832	
ORCUTT	U		58	58	237	7,118		18,914	
VENTURA-A-3,B-3	S	1	34	35	1,035	31,042	302	102,411	
B-1,2	U	2	9	11	129	3,857		14,731	
B-4,5 SOUTH	U		1	1	98	2,945		2,082	
B-4,5 WEST	S	7	22	29	1,118	33,527	1,127	232,772	
B-6 SOUTH	U		1	1	67	2,016		11,103	
C-BLOCK	U		79	79	2,365	70,947		243,438	
C-1,2 WEST	S	1	15	16	880	26,405	10,829	51,041	
C-3 WEST	S	10	28	38	1,299	38,979	2,829	149,117	
D-3	U		11	11	436	13,077		39,600	
D-4	U		2	2	39	1,184		19,461	
D-5 WEST	S	2	66	68	2,946	88,376	40,376	745,192	
D-5,6 NORTH	S	3	111	114	16,669	500,075	113,747	831,141	2
D-6 WEST	S		37	37	2,523	75,682	21,826	303,537	
D-7 D-8	S	17	92	109	11,646	349,392	290	393,050	1
BREA OLINDA-BREA AREA-MIOCENE C	S		1	1	14	412		1,477	
BREA AREA-MIOCENE D	S		7	7	783	23,495	5,429	21,405	1
BREA AREA-OTHERS	U	21	153	174	9,075	272,266		477,501	2
OLINDA AREA	U	50	31	81	589	17,674		9,991	
DOMINGUEZ-DEL AMO ESTATE BLOCK	U		1	1	15	451		1,005	
EAST BLOCK-PLIOCENE OTHERS	U	2	4	6	53	1,576		896	
INGLEWOOD-VICKERS	U	3	11	14	121	3,640		4,906	
RINDGE	U	1	2	3	51	1,545		2,083	
RUBEL	U		4	4	103	3,091		4,166	
MOYNIER	U		2	2	43	1,280		1,725	
LONG BEACH-OLD AREA-UPPER POOLS	U	41	210	251	3,582	107,465		131,940	
OLD AREA-DE SOTO-NORTH FLANK	U		3	3	89	2,684		4,366	
MONTEBELLO-MAIN AREA-BALDWIN 1-2-3	U	1	5	6	67	2,024		4,668	
WEST AREA	U	2		2					

COMPANY FIELD, AREA OR POOL	CLASS	NUMBER OF WELLS			CRUDE PRODUCTION		EXCESS OR SHORTAGE BARRELS	GAS PRODUCTION M.C.F	NO. WELLS
		SHUT IN	PRODUCING	TOTAL	BARRELS DAILY	BARRELS			COMP. ABD.
ROSECRANS-ATHENS AREA-LOWER	U		1	1	17	519		1,150	
BANK AREA-7&8	U		3	3	211	6,326		13,800	
HOWARD TOWNSITE AREA-ZINS	U		1	1	8	242		310	
HOWARD TOWNSITE AREA-7&8	U		11	11	229	6,875		24,762	
SANTA FE SPRINGS-OTHERS	U	33	20	53	251	7,541		5,682	
SEAL BEACH-ALAMITOS AREA	U		2	2	43	1,303		2,299	
NORTH BLOCK-MCGRATH	S		15	15	614	18,425	1,319	26,302	
YORBA LINDA-SHELL	U	3	12	15	325	9,749			
OTHER FIELDS-KRAMER	U	1	1	2	3	98			
PUENTE HILLS	U	47	8	55	89	2,663		3,525	
COMPANY TOTAL		551	2,246	2,796	86,918	2607,617	234,673	4681,600	6
SHELL OIL COMPANY#									
KETTLEMAN NORTH DOME-TEMBLOR	S				34	1,026		2,446	
VAQUEROS	S				17	496		1,204	
STRAND-STEVENS UPPER	U		1	1	2	64		119	
STEVENS LOWER	U		1	1	56	1,670		774	
VENTURA-C-BLOCK	U		1	1	17	522		1,420	
D-3	U	1	1	2	15	440		631	
D-5 WEST	S		1	1	31	923	37*	894	
D-5,6 EAST	S		2	2	54	1,619		3,221	
D-5,6 NORTH	S		4	4	264	7,918	583	10,882	
D-6 WEST	S		2	2	94	2,822	122	9,920	
D-7 D-8	S		3	3	213	6,386		5,438	
DOMINGUEZ-EAST BLOCK-PLIOCENE 3,4&U-5	U	1	8	9	275	8,247		6,832	
EAST BLOCK-PLIOCENE L-5&6	U		5	5	137	4,124		8,251	
EAST BLOCK-PLIOCENE OTHERS	U	4	19	23	527	15,808		7,605	
EAST CENTRAL BLOCK-PLIOCENE	U	5	11	16	383	11,493		6,578	
EAST CENTRAL-MIOCENE 8&C	U		1	1	2	53		317	
WEST CENTRAL BLOCK-PLIOCENE	U	2	4	6	119	3,575		4,934	
WEST CENTRAL BLOCK-MIOCENE 7	U		1	1	3	102		372	
WEST CENTRAL BLOCK-MIOCENE 8	U		3	3	69	2,085		7,584	
WEST CENTRAL-MIOCENE 7&8 SO	U	1	7	8	131	3,943		9,294	
INGLEWOOD-VICKERS	U		15	15	281	8,430		3,311	
RINDGE	U		5	5	195	5,859		5,355	
RUBEL	U		3	3	156	4,668		4,704	
MOYNIER	U		2	2	156	4,675		8,182	
SEAL BEACH-NORTH BLOCK-MCGRATH	S		1	1	107	3,205	205	7,862	
COMPANY TOTAL		14	101	115	3,338	100,153	873	118,130	
SHEPARD-PENDLETON, LTD.									
WHITTIER-CENTRAL AREA-MAIN	U		1	1		15		5	

COMPANY FIELD, AREA OR POOL	CLASS	NUMBER OF WELLS: SHUT IN	PRODUCING	TOTAL	CRUDE PRODUCTION: BARRELS DAILY	BARRELS	EXCESS OR SHORTAGE BARRELS	GAS PRODUCTION M.C.F	NO. WELLS COMP ABD.
SHERMAN ASSOCIATES									
NEWPORT WEST-SURF AREA-EAST BLOCK	U		4	4	236	7,070			
SHIRLEY, E. M.									
PLACERITA-JUANITA AREA	U		3	3	32	961			
SHORT, FRANK RICE, ESTATE OF									
MCKITTRICK	U	2	1	3	8	231			
SIEMON, ALFRED, TRUSTEE .									
FRUITVALE-MARTIN-KERNCO	U		2	2	23	682		16	
SIEMON, FRED									
EDISON-PORTALS-FAIRFAX AREA-WICKER	U	1	1	2	8	250		10	
SIEMON, J. H.									
EDISON-PORTALS-FAIRFAX AREA-WICKER	U		1	1	9	275		10	
SIERRA OIL COMPANY									
NEWPORT WEST-ALDRICH AREA-B	U	2		2					
SURF AREA-EAST BLOCK	U	1		1					
TORRANCE-MAIN	U	1	11	12	64	1,925			
COMPANY TOTAL		4	11	15	64	1,925			
SIGNAL OIL AND GAS COMPANY									
FRESNO GROUP-BURREL-MIOCENE	U	3	5	8	113	3,376		23,430	
RAISIN CITY-TAR-MIOCENE	U		2	2	122	3,668		1,062	
RAISIN CITY-MIOCENE	U	4	8	12	237	7,121		7,164	
RAISIN CITY-EOCENE	U	1	3	4	68	2,029		2,690	
MIDWAY SUNSET-MIDWAY EAST-MARICOPA FLAT	U	1	7	8	30	887		2,079	
MIDWAY WEST-UPPER	U	3	18	21	134	4,008			1
MOUNT POSO GROUP-DORSEY-VEDDER	U		2	2	29	860			
MOUNT POSO-VEDDER	U		6	6	35	1,041		103	
ELWOOD-VAQUEROS	U	13	30	43	3,332	99,954		96,515	
SESPE	U	1	4	5	42	1,266		3,938	
SANTA MARIA VALLEY-MAIN	U	12	22	34	202	6,056		24,133	
EDNA-TIBER AREA	U	20	15	35	44	1,307			
HUNTINGTON BEACH-NORTH AREA-TAR BOLSA	U	4	6	10	263	7,882		3,434	
NORTH AREA-FAULT ZONE	U	2	14	16	483	14,504		31,545	
NORTH AREA-ASHTON	U	38	104	142	7,118	213,557		104,487	1
SOUTH ON-SHORE-A-37	U		42	42	2,644	79,333		43,040	1
SOUTH ON-SHORE-A-66	U		17	17	472	14,165		47,500	
SOUTH ON-SHORE-MAIN	U	1	1	2	34	1,024		1,572	
SOUTH OFF-SHORE-MAIN	U	1	61	62	5,916	177,493		71,408	2
LONG BEACH-OLD AREA-UPPER POOLS	U		7	7	97	2,904		3,612	
OLD AREA-DE SOTO SOUTH FLANK	U		1	1	22	671		853	

65469 O—55——21

COMPANY FIELD, AREA OR POOL	CLASS	NUMBER OF WELLS: SHUT IN	PRODUCING	TOTAL	CRUDE PRODUCTION: BARRELS DAILY	BARRELS	EXCESS OR SHORTAGE BARRELS	GAS PRODUCTION M.C.F	NO. WELLS COMP ABD.
RICHFIELD-EAST AREA	U		1	1	32	950		742	
WILMINGTON-HARBOR-FB-IV-TERMINAL U&L	U	3	14	17	861	25,817		12,406	
HARBOR-FB-IVB-237	U	1	2	3				1,248	
OTHER FIELDS-LEFFINGWELL	U		2	2	16	469		709	
COMPANY TOTAL		108	394	502	22,346	670,342		483,670	5
SILVER PETROLEUM COMPANY									
LONG BEACH-OLD AREA-UPPER POOLS	U		1	1	14	432		1,297	
SILVERSTONE, MILTON									
HUNTINGTON BEACH-SOUTH OFF-SHORE-MAIN	U		1	1	9	271		374	
SIMAROO OIL COMPANY									
HUNTINGTON BEACH-SOUTH OFF-SHORE-MAIN	U		2	2	89	2,673		779	
SIMMONS OIL INCORPORATED									
TORRANCE-MAIN	U	2	24	26	217	6,518		2,909	
SIX COMPANIES									
STANDARD OIL COMPANY, OPERATOR									
HYPERION	U		1	1	21	617		540	
SKEEN, MARCUS E.									
HUNTINGTON BEACH-SOUTH ON-SHORE-TAR	U		1	1	5	141			
SKINNER, J. K.									
FRUITVALE-MARTIN-KERNCO	U		1	1	21	620			
SLICK-MOORMAN PRODUCTION COMPANY									
CAT CANYON EAST-SISQUOC-MONTEREY	U	4		4					
SLOSSON, O. M.									
TEJON HILLS-S	U	2	26	28	372	11,170			2
V	U	1	3	4	33	1,004			
T	U		1	1	13	396			1
TORRANCE-MAIN	U		2	2	61	1,841		1,026	
WHITTIER-CENTRAL AREA-CENTRAL FEE	S		1	1	16	472			
COMPANY TOTAL		3	33	36	495	14,883		1,026	3
S. L. W. OIL COMPANY									
HUNTINGTON BEACH-HUNTINGTON AVE-JONES	S		1	1	85	2,560	1,864	2,500	1
S. M. B. OIL COMPANY									
HUNTINGTON BEACH-SOUTH ON-SHORE-TAR	U		1	1	9	258			
SMITH, C. S.									
HUNTINGTON BEACH-SOUTH ON-SHORE-TAR	U	4	1	5	1	25			
SOUTH ON-SHORE-MAIN	U	3		3					
COMPANY TOTAL		7	1	8	1	25			
SMITH, J. A.									
LONG BEACH-OLD AREA-UPPER POOLS	U		1	1	6	180		182	

COMPANY FIELD, AREA OR POOL	CLASS	NUMBER OF WELLS: SHUT IN	PRODUCING	TOTAL	CRUDE PRODUCTION: BARRELS DAILY	BARRELS	EXCESS OR SHORTAGE BARRELS	GAS PRODUCTION M.C.F	NO. WELLS COMP ABD.
SMITH, J. A.									
LONG BEACH-OLD AREA-UPPER POOLS	U		1	1	6	180		182	
SANTA FE SPRINGS-OTHERS	U	1	1	2	16	474		440	
COMPANY TOTAL		1	2	3	22	654		622	
SMITH, J. K.									
KERN RIVER	U	8	39	47	249	7,480			
SMITH, RONALD C.									
HUNTINGTON BEACH-HUNTINGTON AVE-JONES	S		1	1	28	853	331	1,641	1
INGLEWOOD-SENTOUS	U		1	1	7	218		1,607	
COMPANY TOTAL			2	2	35	1,071	331	3,248	1
SMITH, S. V.									
YORBA LINDA-SMITH	U		1	1	7	201		90	
SNOOK & WELLS, INC.									
MIDWAY SUNSET-MIDWAY WEST-UPPER	U	7	25	32	91	2,740		548	
SNYDER & HOFF									
HUNTINGTON BEACH-NORTH AREA-ASHTON	U	1		1					
SODERBERG, D. A.									
RICHFIELD-EAST AREA	U	1	1	2	4	132			
SOMAVIA, RAMON, PETROLEUM ACCOUNT									
PLACERITA-JUANITA AREA	U	1	2	3	40	1,186			
SOUND PETROLEUM, INC.									
WILMINGTON-HARBOR-FBV-RANGER	U		3	3	15	444		172	
SOUTH CERRITOS OIL COMPANY, INC.									
MIDWAY SUNSET-MIDWAY WEST-QUALITY	U		4	4	35	1,042			
SOUTHERN CALIFORNIA DRILLING COMPANY									
HUNTINGTON BEACH-NORTH AREA-TAR BOLSA	U		4	4	39	1,185		601	
SOUTHERN CALIFORNIA GAS COMPANY, UNION OIL COMPANY, OPERATOR									
PLAYA DEL REY-DEL REY HILLS AREA	U	28	9	37	157	4,697		2,408	
SOUTHERN CALIFORNIA PETROLEUM CORP.									
MORALES CANYON-CLAYTON	U	2	8	10	121	3,624		2,174	
RUSSELL RANCH-MAIN AREA-DIBBLEE	S	1		1					
DEL VALLE-EAST AREA-DEL VALLE	S		1	1	11	322	278#		
WEST AREA-VASQUEZ 14	S		4	4	39	1,169			
RAMONA-BLACK	U		1	1	4	117		523	
KERN DEL VALLE	S		10	10	147	4,425		19,772	
HUNTINGTON BEACH-HUNTINGTON AVE-JONES	S		8	8	470	14,115	1,207	25,820	1
ROSECRANS-ATHENS AREA-O DEA	U		2	2	52	1,564		2,303	
MAIN AREA-O DEA	U		2	2	5	164		747	
SOUTH AREA-O DEA	U		4	4	33	986		2,329	
COMPANY TOTAL		3	40	43	882	26,486	929	53,668	1
SOUTHERN CALIFORNIA PETROLEUM CORP.#									
DEL VALLE-SOUTH AREA	U		1	1	5	136			

COMPANY FIELD, AREA OR POOL	CLASS	NUMBER OF WELLS			CRUDE PRODUCTION		EXCESS OR SHORTAGE BARRELS	GAS PRODUCTION M.C.F	NO. WELLS COMP ABD.
		SHUT IN	PRODUCING	TOTAL	BARRELS DAILY	BARRELS			
SOUTHWEST EXPLORATION COMPANY									
HUNTINGTON BEACH-NORTH AREA-TAR BOLSA	U		8	8	113	3,401		2,109	
NORTH AREA-ASHTON	U	3	23	26	357	10,720		13,125	
SOUTH OFF-SHORE-JONES	S	22	105	127	6,138	184,148	262*	135,623	1
SOUTH OFF-SHORE-MAIN	U	6	232	238	21,462	643,853		500,292	1
COMPANY TOTAL		31	368	399	28,070	842,122	262*	651,149	2
SOUTHWEST OIL FIELDS SERVICE COMPANY									
TORRANCE-DEL AMO	U	1		1					
SPELLACY & LAW, INC.									
MIDWAY SUNSET-MIDWAY WEST-UPPER	U	1	28	29	36	1,078		10	
SPITFIRE OIL COMPANY									
RICHFIELD-EAST AREA	U		2	2	13	400		60	
SPRINGER BROS.									
MIDWAY SUNSET-MIDWAY EAST-MARICOPA FLAT	U		1	1	13	390			
SPUR OIL COMPANY									
RICHFIELD-EAST AREA	U		1	1	6	168			
STANDARD OIL COMPANY OF CALIFORNIA									
ANT HILL-OLCESE	U	2	1	3	4	122			
JEWETT	U		1	1	3	99		272	
BELLEVUE-STEVENS	S		1	1	15	459		290	
BELRIDGE SOUTH	U	4	46	50	260	7,801		5,726	
BUENA VISTA-BUENA VISTA FRONT	U	36	126	162	1,971	59,139		18,228	
BVH-ANTELOPE SHALE-WE DOME	S	1	10	11	985	29,540	420*	23,584	1
BUENA VISTA HILLS-OTHERS	U	42	451	493	4,439	133,158		221,518	
CANFIELD GROUP-CANFIELD RANCH-STEVENS	U		1	1	18	535		393	
COALINGA-EASTSIDE AREA-TEMBLOR	U	68	397	465	5,302	159,074		33,675	5
WESTSIDE AREA-TEMBLOR	U	34	209	243	1,846	55,395		11,584	
COALINGA EAST EXTENSION-NE AREA-EOCENE	U	1		1					
GUIJARRAL HILLS-ALLISON	U	4		4					
LEDA	S	7	10	17	508	15,228	5,861	33,026	
LEDA NORTH	S		18	18	3,435	103,047	1,213	134,952	1
BOURDIEU	S		1	1	835	25,064	16,064	18,152	1
GUIJARRAL HILLS WEST-LEDA	S		2	2	384	11,508	2,352*	4,573	
JACALITOS-TEMBLOR	U	16	71	87	1,150	34,499		62,347	
OIL CITY-CRETACEOUS	U	6	1	7	34	1,035		240	
PLEASANT VALLEY-EOCENE	S	4	15	19	557	16,721		10,852	
COLES LEVEE N-NORTHWEST AREA-STEVENS	U		1	1	26	784		900	
RICHFIELD W.-MAIN WESTERN	S		1	1	45	1,339		810	
EDISON-WEST AREA	U		3	3	38	1,145		1,155	

COMPANY FIELD, AREA OR POOL	CLASS	NUMBER OF WELLS: SHUT IN	PRODUCING	TOTAL	CRUDE PRODUCTION: BARRELS DAILY	BARRELS	EXCESS OR SHORTAGE BARRELS	GAS PRODUCTION M.C.F	NO. WELLS COMP ABD
EDISON GROVES AREA-SHIELDS ARMS	U		2	2	34	1,013			
JEPPI	U		16	16	982	29,467		88,732	1
FRUITVALE-MARTIN-KERNCO	U		1	1	17	520		1,047	
GREELEY-STEVENS	U	5	10	15	279	8,384		9,017	
12-21	U		1	1	26	786		431	
RIO BRAVO	S		1	1	5	165		113	
GREENACRES-BILLINGTON	U								1
KERN BLUFF	U	1		1					
KERN FRONT	U	4	134	138	663	19,891		2,913	
KERN RIVER	U	25	364	389	900	27,014		60	
LOST HILLS-MAIN	U	13	126	139	625	18,761		35,159	
WILLIAMSON	U	3	24	27	110	3,302		9,145	
G-1	U		1	1	7	225		493	
COHN	U	1	16	17	272	8,175		23,841	
CYMRIC-MCKITTRICK FRONT-UPPER	U	6	33	39	280	8,414		660	
MCKITTRICK FRONT-LOWER	U		6	6	87	2,607		3,242	
WELPORT AREA-SHALLOW	U	2	65	67	200	5,997		5,084	
WELPORT AREA-FITZGERALD	U		3	3	36	1,074		2,715	
WELPORT AREA-ANDERSON	U		3	3	15	463		398	
WELPORT AREA-WESTON	U		2	2	24	733		665	
WELPORT AREA-WESTON 3	U		1	1	11	335		320	
WELPORT AREA-PHACOIDES	U		2	2	104	3,110		3,390	
WELPORT AREA-OCEANIC	U	3	6	9	2,048	61,445		10,744	
WELPORT AREA-WOODY	U		1	1	16	495		270	
SALT CREEK WEST AREA-CARNEROS	U		2	2	108	3,228		1,560	
MCKITTRICK	U	15	31	46	313	9,389		2,280	
MIDWAY-SUNSET-MIDWAY EAST-SHALLOW	U	65	360	425	3,615	108,440		89,535	1
MIDWAY EAST-LAKEVIEW	U	4	27	31	561	16,816		3,450	
MIDWAY EAST-GIBSON	U		2	2	12	350		180	
MIDWAY EAST-MARICOPA FLAT	U	3	4	7	15	447		360	
MIDWAY EAST-PACIFIC	U	1	8	9	140	4,199		11,565	
MIDWAY EAST-PENTLAND	U		1	1	3	105		360	
MIDWAY EAST-MIOCENE MISC	U		3	3	37	1,111		4,975	
MIDWAY EAST-EXETER	S		6	6	1,941	58,218	10,200	42,671	1
MIDWAY EAST-29-D	S		1	1	279	8,364	636*	2,236	
MIDWAY WEST-UPPER	U	48	204	252	1,870	56,103		19,284	
MIDWAY WEST-ETHEL D	U		11	11	274	8,215		13,008	
MOUNTAIN VIEW-ARVIN AREA-OTHERS	U	1	8	9	79	2,356		2,671	
MAIN AREA-WIBLE-NOZU	U		2	2	53	1,599		2,878	

COMPANY FIELD, AREA OR POOL	CLASS	NUMBER OF WELLS			CRUDE PRODUCTION		EXCESS OR SHORTAGE BARRELS	GAS PRODUCTION M.C.F	NO. WELLS COMP ABD.
		SHUT IN	PRODUCING	TOTAL	BARRELS DAILY	BARRELS			
MAIN AREA-OTHERS	U	5	28	33	367	11,015		6,974	
POSO CREEK GROUP-PREMIER MAIN AREA	U	11	105	116	505	15,150		3,711	
PYRAMID HILLS-OTHERS	U		10	10	52	1,559		870	
WASCO-VEDDER	U	2	2	4	23	698		1,032	
EOCENE	U		1	1	41	1,225		10,740	
WHEELER RIDGE-MAIN	U	2	31	33	336	10,079		7,918	
2-38	U		3	3	124	3,733		6,966	
OTHER FIELDS-ROSEDALE RANCH	U	1	29	30	1,848	55,454		52,629	2
ALISO CANYON-ALISO WEST	U		1	1	9	258		181	
PORTER	S		2	2	95	2,859	1,242	3,340	
DEL ALISO	S		8	8	630	18,906	2,200	28,934	
SESNON	S	1	4	5	239	7,157	433*	17,662	
FAULTED SESNON	U		2	2	20	591		662	
FREW EOCENE	U		1	1	85	2,563		1,304	
CASTAIC HILLS-STERLING	S		8	8	421	12,644	765	31,235	
DEL VALLE-EAST AREA-LINCOLN	S		2	2	115	3,448	1,052*	8,015	
WEST AREA-N L F 3-1	U		1	1	4	116		390	
WEST AREA-SEPULVEDA	U		2	2	33	982		1,980	
WEST AREA-VASQUEZ-VIDEGAIN	S		4	4	51	1,536		2,382	
WEST AREA-VASQUEZ 14	S		3	3	48	1,427		4,398	
FILLMORE-SPALDING	S		3	3	1,003	30,089	3,661*	41,344	
MISSION-5-1	U		1	1	193	5,791		1,950	
6-1	U		2	2	34	1,030		1,763	
MONTALVO WEST-MCGRATH	U	3	12	15	354	10,628		60,879	
COLONIA	S	1	7	8	1,364	40,924	3,844	17,283	
NEWHALL GROUP-ELSMERE	U	9		9					
PICO CANYON	U	31	10	41	21	638		1,782	
WILEY CANYON	U	11		11					
OXNARD-MCINNIS	U		3	3	100	2,994		2,621	1
LIVINGSTON	S		6	6	475	14,259	10,811*	21,272	2
LUCAS	U	1		1					
PLACERITA-OLD AREA	U	5	11	16	113	3,386		3,308	
RAMONA-KERN DEL VALLE	S		11	11	192	5,762		10,054	
CAT CANYON WEST-ALEXANDER	U		8	8	407	12,221		10,840	
LOS FLORES	S	2	21	23	1,014	30,412	2,675*	5,087	
GATO RIDGE-TOGNAZZINI	S	5	18	23	972	29,151	1,454	15,045	
SANTA MARIA VALLEY-HOUK	S	2	1	3	221	6,642		1,530	
COYOTE EAST-ANAHEIM	U		9	9	220	6,596		3,880	
STERN	U		4	4	208	6,242		3,068	

COMPANY	FIELD, AREA OR POOL	CLASS	NUMBER OF WELLS: SHUT IN	NUMBER OF WELLS: PRODUCING	NUMBER OF WELLS: TOTAL	CRUDE PRODUCTION: BARRELS DAILY	CRUDE PRODUCTION: BARRELS	EXCESS OR SHORTAGE BARRELS	GAS PRODUCTION M.C.F	NO. WELLS: COMP. ABD.
COYOTE WEST	TOP EAST	U	1	8	9	111	3,344		1,830	
	MAIN	U	6	140	146	2,270	68,103		53,112	
	99	U	3	87	90	1,879	56,368		44,600	
	LOWER 99 EAST	U	3	13	16	266	7,987		108,455	
	138	U		7	7	143	4,279		15,671	
	EMERY EAST	U	5	37	42	924	27,727		264,621	
	EMERY WEST	U	9	29	38	850	25,498		589,240	
EL SEGUNDO		U		2	2	18	529		210	
HUNTINGTON BEACH	HUNTINGTON AVE-JONES	S		5	5	354	10,623	841	21,789	2
	HUNTINGTON AVE-MAIN	S		3	3	723	21,686	6,686	19,674	
	NORTH AREA-TAR BOLSA	U	5	49	54	1,281	38,421		24,096	
	NORTH AREA-ASHTON	U	2	97	99	1,639	49,157		92,985	
	SOUTH ON-SHORE-TAR	U	3	41	44	573	17,188		12,832	
	SOUTH ON-SHORE-A-37	U	4	45	49	543	16,297		14,428	
	SOUTH ON-SHORE-A-66	U		3	3	35	1,049		3,497	
	SOUTH ON-SHORE-JONES	U	3	29	32	624	18,715		14,839	
	SOUTH ON-SHORE-MAIN	U	5	84	89	1,291	38,725		43,676	
	SOUTH OFF-SHORE-JONES	S		2	2	36	1,082		660	
	SOUTH OFF-SHORE-MAIN	U		6	6	55	1,650		3,941	
	SURF AREA-WEST BLOCK	U		7	7	68	2,047		1,376	
INGLEWOOD	VICKERS	U	9	248	257	6,143	184,302		106,493	
	RINDGE	U		19	19	347	10,403		11,724	
	RUBEL	U	1	20	21	772	23,147		26,225	
	MOYNIER	U		20	20	674	20,214		38,684	
	SENTOUS	U		2	2	17	518		4,305	
MONTEBELLO	MAIN AREA-BALDWIN 1-2-3	U	15	154	169	2,357	70,711		111,137	
	WEST AREA	U	5	8	13	74	2,224		6,542	
NEWPORT WEST	ALDRICH AREA-C	U		1	1	29	881		750	
	ANAHEIM SUGAR AREA	U		2	2	28	835		135	
RICHFIELD	EAST AREA	U	1	18	19	192	5,771		2,081	
	WEST AREA	U	1	50	51	1,383	41,485		31,529	
SANTA FE SPRINGS	OCONNELL SOUTHEAST	U		1	1	4	117		433	
	OTHERS	U	4	72	76	925	27,744		33,290	1
SEAL BEACH	NORTH BLOCK-SAN GABRIEL	U		3	3	40	1,210		509	
	NORTH BLOCK-SELOVER	U		2	2	37	1,103		560	
	NORTH BLOCK-WASEM	U		1	1	17	512		480	
	NORTH BLOCK-MCGRATH	S		6	6	353	10,586	2,293*	21,337	
	SOUTH BLOCK-BIXBY SELOVER	U		3	3	32	968		438	
	SOUTH BLOCK-WASEM	U	1	17	18	395	11,852		12,807	

COMPANY FIELD, AREA OR POOL	CLASS	NUMBER OF WELLS: SHUT IN	PRODUCING	TOTAL	CRUDE PRODUCTION: BARRELS DAILY	BARRELS	EXCESS OR SHORTAGE BARRELS	GAS PRODUCTION M.C.F	NO. WELLS: COMP	ABD.
SOUTH BLOCK-MCGRATH	U	1	4	5	205	6,148		1,710		
SOUTH BLOCK-LANE	U		6	6	510	15,287		10,535	1	
TORRANCE-TAR-RANGER	U	1	1	2	7	222		210		
MAIN	U	14	64	78	595	17,845		11,280		
DEL AMO	U		29	29	324	9,728		17,606		
WHITTIER-CENTRAL AREA-MAIN	U	64	81	145	844	25,313		27,664		
CENTRAL AREA-CENTRAL FEE	S		9	9	676	20,280	1,372	252		
COMPANY TOTAL		683	4,763	5,446	80,496	2415,054	27,409	3181,006	19	2
STANDARD OIL COMPANY OF CALIFORNIA#										
BUENA VISTA-BVH-ANTELOPE SHALE-W. DOME	S		3	3	210	6,286	89*	4,082		
TEJON HILLS-S	U		5	5	37	1,120		345		
V	U	1	6	7	228	6,838		3,845		
T	U		2	2	30	913		600		
ALISO CANYON-ALISO	U		1	1	21	628		194		
PORTER	S		3	3	375	11,247	4,888	4,822		
DEL ALISO	S		2	2	417	12,510	4,365	5,320		
SESNON	S		10	10	706	21,175	1,730*	30,775		
FREW EOCENE	U		1	1	64	1,910		1,740		
INGLEWOOD-VICKERS	U		11	11	190	5,703		2,240		
RINDGE	U		4	4	132	3,963		3,623		
RUBEL	U		2	2	105	3,157		3,183		
MOYNIER	U		2	2	105	3,162		5,535		
COMPANY TOTAL		1	52	53	2,620	78,612	7,434	66,304		
STANSBURY-WEBB										
FRUITVALE-MARTIN-KERNCO	U		2	2	22	666		120		
STANTEX OIL CO.										
HUNTINGTON BEACH-SOUTH ON-SHORE-MAIN	U	1		1						
STANTON OIL COMPANY										
HUNTINGTON BEACH-SOUTH ON-SHORE-MAIN	U		2	2	32	963		428		
LONG BEACH-OLD AREA-UPPER POOLS	U	2	14	16	268	8,028		5,790		
COMPANY TOTAL		2	16	18	300	8,991		6,218		
STEELE PETROLEUM COMPANY										
KERN RIVER	U		12	12	96	2,876				
TEJON HILLS-S	U	1	40	41	504	15,118		559		
COMPANY TOTAL		1	52	53	600	17,994		559		
STEPHENS PETROLEUM COMPANY										
KERN RIVER	U		3	3	4	115				
STEWART, CHARLES B., JR., TRUSTEE										
SESPE CANYON GRP-FOOT OF THE HILL	U	1		1						

COMPANY FIELD, AREA OR POOL	CLASS	NUMBER OF WELLS: SHUT IN	PRODUCING	TOTAL	CRUDE PRODUCTION: BARRELS DAILY	BARRELS	EXCESS OR SHORTAGE BARRELS	GAS PRODUCTION M.C.F	NO. WELLS COMP. ABD.
SESPE CANYON GRP-FOOT OF THE HILL	U	1		1					
STINE, SABASTA & RAGEL									
NEWHALL GROUP-TOWNSITE	U		2	2	2	55			
STREBEL, WILLIAM F.									
PLACERITA-OLD AREA	U	1		1					
STYX ASSOCIATES									
LONG BEACH-OLD AREA-UPPER POOLS	U		1	1	9	266		250	
SUDDUTH, C. F.									
LONG BEACH-OLD AREA-UPPER POOLS	U		2	2	17	500		527	
WILMINGTON-HARBOR-FBV-RANGER	U		1	1	10	298		119	
TOWN LOT-TAR-RANGER-TERMINAL	U		10	10	122	3,659		2,666	
COMPANY TOTAL			13	13	149	4,457		3,312	
SUNCOAST OIL COMPANY									
ROSECRANS-ATHENS AREA-O DEA	U		1	1	62	1,861		1,453	
SUNRAY OIL CORPORATION									
GUIJARRAL HILLS-ALLISON	U	1	9	10	136	4,076		7,383	
LEDA	S		22	22	1,511	45,334	11,719	114,975	
LEDA NORTH	S		1	1	42	1,264		6,450	
SMITH	S		1	1	96	2,877	2,127	1,505	
CYMRIC-MCKITTRICK FRONT-UPPER	U	4	17	21	177	5,311			
MIDWAY-SUNSET-MIDWAY EAST-SHALLOW	U	2	6	8	47	1,423			
MIDWAY EAST-MARICOPA FLAT	U	2	4	6	37	1,114		2,055	
MIDWAY WEST-UPPER	U	3	57	60	820	24,601			
MOUNTAIN VIEW-MAIN AREA-OTHERS	U	3	2	5	21	644		277	
ROUND MT. GROUP-COFFEE CANYON-VEDDER	U		8	8	131	3,930			
MONTALVO WEST-COLONIA	S	1		1			1,950*		
NEWHALL-POTRERO-1-2-3	S	22	44	66	3,260	97,803	1,077*	967,367	
5TH	S	2	32	34	2,462	73,862	242	224,248	
6TH	S	2	11	13	1,455	43,637	1,463*	144,932	1
7TH	S	1	13	14	2,849	85,484	10,516*	53,062	
9TH	U		1	1	23	695		750	
CAT CANYON WEST-LOS FLORES	S	1	9	10	474	14,220	195		
FOUR DEER	U		12	12	87	2,624		10,246	
SANTA MARIA VALLEY-MAIN	U		35	35	797	23,915		17,847	
ROSECRANS-MAIN AREA-MAXWELL-HOGE	U	5	9	14	227	6,801		10,874	
MAIN AREA-ZINS	U	2	11	13	217	6,522		11,348	
MAIN AREA-O DEA	U	4	5	9	60	1,801		3,831	
MAIN AREA-8TH	U		2	2	56	1,680		3,740	
SOUTH AREA-O DEA	U		2	2	26	787		2,447	
COMPANY TOTAL		55	313	368	15,011	450,405	723*	1583,337	1
SUNRAY OIL CORPORATION#									
ELWOOD-VAQUEROS	U		3	3	66	1,993		2,184	

COMPANY FIELD, AREA OR POOL	CLASS	NUMBER OF WELLS: SHUT IN	PRODUCING	TOTAL	CRUDE PRODUCTION: BARRELS DAILY	BARRELS	EXCESS OR SHORTAGE BARRELS	GAS PRODUCTION M.C.F	NO. WELLS COMP ABD.
SESPE	U	1	1	2	14	424		414	
GATO RIDGE-TOGNAZZINI	S	2	9	11	665	19,958	4,606	6,857	
COMPANY TOTAL		3	13	16	745	22,375	4,606	9,455	
SUNSET OIL COMPANY									
EDISON-WEST AREA	U		3	3	14	419			
MIDWAY-SUNSET-MIDWAY EAST-SHALLOW	U	1		1					
MOUNT POSO GROUP-DOMINION-VEDDER	U	1	12	13	93	2,791			
TEJON HILLS-S	U	10	58	68	655	19,662			
PLACERITA-JUANITA AREA	U	5	32	37	658	19,738		230	
OLD AREA	U	7	69	76	975	29,241		2,650	
HUNTINGTON BEACH-NORTH AREA-ASHTON	U	1	3	4	30	902		756	
SLOUGH-RAMSER EAST	S		1	1	120	3,595	395#	9,981	1
SOUTH ON-SHORE-MAIN	U		1	1	6	178		50	
SOUTH OFF-SHORE-MAIN	U	1	1	2	3	102			
LONG BEACH-OLD AREA-UPPER POOLS	U	1	17	18	375	11,259		11,291	
ROSECRANS-ATHENS AREA-LOWER	U		1	1	6	181		148	
SANTA FE SPRINGS-OTHERS	U	1		1					
COMPANY TOTAL		28	198	226	2,935	88,068	395#	25,106	1
SUPERIOR OIL COMPANY, THE									
BELLEVUE-STEVENS	S		12	12	627	18,819		17,368	
CANFIELD GROUP-GOSFORD EAST-STEVENS	S		9	9	463	13,878	312	20,063	
OLD RIVER-51-36	U		3	3	53	1,596		1,719	
COALINGA-WESTSIDE AREA-TEMBLOR	U	1	7	8	77	2,296			
GUIJARRAL HILLS-ALLISON	U	1		1					
CUYAMA SOUTH-MAIN AREA-HOMAN	S		17	17	2,321	69,616	796	22,912	
MORALES CANYON-GOVERNMENT 18	U		2	2	78	2,336		1,439	
EDISON-PORTALS-FAIRFAX AREA-WICKER	U		4	4	42	1,272		655	
FRESNO GROUP-SAN JOAQUIN-EOCENE	U		2	2	15	458			
LOST HILLS-MAIN	U		8	8	31	933		597	
G-1	U		8	8	152	4,571		4,019	
MCDONALD ANTICLINE-LAYMAN AREA	U		4	4	38	1,138			
BELGIAN ANTICLINE NW-FORBES-PT RKS 3RD	U		1	1	10	288		14,735	
CYMRIC-WELPORT AREA-SHALLOW	U	6	20	26	121	3,626			
WELPORT AREA-FITZGERALD	U		3	3	66	1,974		5,609	
WELPORT AREA-PHACOIDES	U		1	1	12	369		408	
WELPORT AREA-OCEANIC	U		6	6	618	18,535		1,420	
WELPORT AREA-WOODY	U	1	2	3		2		29,453	
SHEEP SPRINGS AREA-54-21	U		12	12	119	3,562		1,441	
SHEEP SPRINGS AREA-CARNEROS	U		1	1	1	20			

COMPANY FIELD, AREA OR POOL	CLASS	NUMBER OF WELLS: SHUT IN	NUMBER OF WELLS: PRODUCING	NUMBER OF WELLS: TOTAL	CRUDE PRODUCTION: BARRELS DAILY	CRUDE PRODUCTION: BARRELS	EXCESS OR SHORTAGE BARRELS	GAS PRODUCTION M.C.F	NO. WELLS COMP. ABD.
SHEEP SPRINGS AREA-PHACOIDES	U		1	1		1			
PALOMA-MAIN AREA-PALOMA CRUDE OIL	S	1	16	17	1,109	33,273	11,689	399,179	
RIO BRAVO-HELBLING	S		1	1	268	8,041	991	2,993	
RAMONA-BLACK	U		2	2	24	709		2,162	
KERN DEL VALLE	S		16	16	335	10,043		18,043	
SAN ARDO-CAMPBELL AREA-AURIGNAC	S		1	1	117	3,504	2,424		
SUPERIOR AREA-AURIGNAC	S		8	8	86	2,570			
LONG BEACH-OLD AREA-UPPER POOLS	U	3	10	13	88	2,637		2,246	
RICHFIELD-EAST AREA	U		14	14	369	11,064		18,056	
ROSECRANS-MAIN AREA-MAXWELL-HOGE	U		2	2	6	173			
MAIN AREA-O DEA	U	1	4	5	28	848		2,081	
SEAL BEACH-ALAMITOS AREA	U		2	2	7	225		123	
TORRANCE-TAR-RANGER	U		4	4	30	886		764	
MAIN	U		46	46	353	10,603		9,119	
DEL AMO	U	1	1	2	1	32		46	
WILMINGTON-HARBOR-FB-IV-TERMINAL U&L	U		1	1	85	2,539		1,037	
HARBOR-FB-IVD-UP-FORD-237	S		1	1	10	314		223	
HARBOR-FBV-RANGER	U		15	15	234	7,031		3,376	
COMPANY TOTAL		15	267	282	7,994	239,782	16,212	581,286	
SURF ASSOCIATES, INC.									
HUNTINGTON BEACH-SOUTH OFF-SHORE-MAIN	U	1		1				305	
SURFLAND OIL COMPANY									
NEWPORT WEST-ALDRICH AREA-B	U	1	3	4	63	1,895		172	
ALDRICH AREA-C	U		1	1	10	308		24	
SURF AREA-EAST BLOCK	U		2	2	88	2,640		115	
COMPANY TOTAL		1	6	7	161	4,843		311	
SURPRISE OIL COMPANY									
MIDWAY SUNSET-MIDWAY WEST-UPPER	U		13	13	162	4,874			
S. & W. OIL COMPANY									
PLAYA DEL REY-VENICE AREA	U		1	1	22	670		139	
SWARTZBAUGH, J. O.									
HUNTINGTON BEACH-NORTH AREA-ASHTON	U		1	1	3	90			
TAFT INVESTMENT COMPANY									
MIDWAY-SUNSET-MIDWAY EAST-SHALLOW	U	1	1	2	4	122			
TANNEHILL OIL COMPANY									
MIDWAY SUNSET-MIDWAY WEST-UPPER	U	2	36	38	257	7,700		1,200	
TANNER, HAROLD H., & ASSOCIATES									
MIDWAY SUNSET-MIDWAY EAST-MARICOPA FLAT	U		5	5	3	85			
TAYLOR & ASSOCIATES									
LONG BEACH-OLD AREA-UPPER POOLS	U		2	2	69	2,082		688	

COMPANY FIELD, AREA OR POOL	CLASS	NUMBER OF WELLS SHUT IN	NUMBER OF WELLS PRODUCING	NUMBER OF WELLS TOTAL	CRUDE PRODUCTION BARRELS DAILY	CRUDE PRODUCTION BARRELS	EXCESS OR SHORTAGE BARRELS	GAS PRODUCTION M.C.F	NO. WELLS COMP ABD.
TEATER-RADLEY CO.									
CASCADE	S		2	2	120	3,597	2,403*	60	
TEN EYCK, FLOYD R.									
HUNTINGTON BEACH-SOUTH ON-SHORE-MAIN	U		1	1	1	22			
TERMINAL OIL COMPANY									
ROSECRANS-ATHENS AREA-UPPER	U		3	3	49	1,481		1,348	
WILMINGTON-TERMINAL-FB-I-TAR-RGR-TERM	U		2	2	37	1,098			
COMPANY TOTAL			5	5	86	2,579		1,348	
TERMO COMPANY, THE									
HUNTINGTON BEACH-SOUTH OFF-SHORE-JONES	S		1	1	175	5,236	4,216	1,456	
SOUTH OFF-SHORE-MAIN	U		5	5	246	7,373		2,493	
LONG BEACH-AIRPORT AREA	S		5	5	1,387	41,617	12,154	302,845	1
WILMINGTON-HARBOR-FB-IV-TAR	U		1	1	4	132		442	
HARBOR-FB-IV-RANGER	U		3	3	44	1,329		687	
HARBOR-FB-IV-TERMINAL U&L	U		7	7	324	9,711		2,597	
HARBOR-FB-IV-UP	U		1	1	69	2,061		2,018	
HARBOR-FB-IVB-237	U		1	1	15	450		1,364	
HARBOR-FB-IVAB-FORD	U		2	2	36	1,092		2,867	
COMPANY TOTAL			26	26	2,300	69,001	16,370	316,769	1
TERRY DRILLING CO.									
SANTA PAULA GRP-SANTA PAULA CANYON	U	3	3	6	23	685			
TEXAS COMPANY, THE									
ANTELOPE HILLS-EAST BLOCK	S		2	2	13	384	395*	334	
WEST BLOCK	S	1	5	6	219	6,575	545	3,206	
NORTH	U		2	2	63	1,901		289	
BELRIDGE NORTH-R SAND	S	1	1	2				899	
BELRIDGE 64	S	1		1					
Y SAND	S		1	1	13	404		8,094	
BUENA VISTA-BUENA VISTA FRONT	U	12	2	14	7	200			
BUENA VISTA HILLS-OTHERS	U	6	5	11	17	509		597	
COALINGA-EASTSIDE AREA-TEMBLOR	U	1	4	5	72	2,158		120	
WESTSIDE AREA-TEMBLOR	U	25	120	145	1,680	50,412		12	
JACALITOS-TEMBLOR	U		2	2	31	945		838	
EDISON-MAIN AREA-FRACTURED SCHIST	U		4	4	105	3,140			
WEST AREA	U	3	14	17	76	2,287		652	
KERN FRONT	U	2	50	52	500	15,011			
LOST HILLS-MAIN	U		1	1	18	532		700	
WILLIAMSON	U	3	8	11	53	1,601		1,940	
OVERALL	U		2	2	14	421		463	

COMPANY	FIELD, AREA OR POOL	CLASS	NUMBER OF WELLS: SHUT IN	PRODUCING	TOTAL	CRUDE PRODUCTION: BARRELS DAILY	BARRELS	EXCESS OR SHORTAGE BARRELS	GAS PRODUCTION M.C.F	NO. WELLS COMP ABD.
WILLIAMSON		U								
OVERALL		U		2	2	14	421		463	

COMPANY	FIELD, AREA OR POOL	CLASS	NUMBER OF WELLS: SHUT IN	PRODUCING	TOTAL	CRUDE PRODUCTION: BARRELS DAILY	BARRELS	EXCESS OR SHORTAGE BARRELS	GAS PRODUCTION M.C.F	NO. WELLS COMP ABD.
BELGIAN ANTICLINE	SOUTHEAST-PHACOIDES	S	2	2	4	20	612		4,437	
	SOUTHEAST-OCEANIC A	S	3	2	5	251	7,539	489	42,204	
	SOUTHEAST-OCEANIC B	U		1	1	8	227		13,029	
	SOUTHEAST-OCEANIC C	U	2		2					
	S. E.-POINT OF ROCKS	S		4	4	40	1,210		7,041	
MIDWAY-SUNSET	MIDWAY EAST-SHALLOW	U	3	25	28	232	6,957		486	
	MIDWAY EAST-LAKEVIEW	U	14	18	32	376	11,277		2,120	
	MIDWAY EAST-EXETER	S		2	2	451	13,538	3,365	7,583	
	MIDWAY WEST-UPPER	U	17	54	71	967	29,024		2,536	
	SANTIAGO-SHALLOW	U	3		3					
	SANTIAGO-LEUTHOLTZ	S		6	6	613	18,381	6,711	4,200	
MOUNT POSO GROUP	MOUNT POSO-VEDDER	U	2	24	26	692	20,769			
MOUNTAIN VIEW	ARVIN AREA-H S J-2	U	1	25	26	1,361	40,819		72,132	1
	ARVIN AREA-GEORGE	U	1	16	17	564	16,932		23,801	
	ARVIN AREA-OTHERS	U	2	12	14	103	3,095		7,514	
	MAIN AREA-OTHERS	U		2	2	94	2,824		2,000	
OTHER FIELDS	TURK ANTICLINE	U	1		1					
BARDSDALE	EOCENE	U		1	1	15	442		1,822	
CASTAIC HILLS	STERLING	S	2	6	8	84	2,506		6,559	
HONOR RANCHO	RANCHO	S	2	6	8	609	18,265	5,213	28,914	
	WAYSIDE	S	3	12	15	1,959	58,774	4,526*	150,828	
NEWHALL	POTRERO-1-2-3	S		2	2	9	257	163*	1,042	
RAMONA	BLACK	U		4	4	81	2,440		2,498	
	KERN DEL VALLE	S	2	33	35	571	17,130	1,417	66,149	
SHIELLS CANYON	BASOLO	U	4	12	16	312	9,357		4,900	
	SESPE	U	23	109	132	461	13,841		24,239	
SOMIS		U		1	1	6	176		145	
SOUTH MOUNTAIN	SESPE	U	4	136	140	2,179	65,364		212,855	
SAN ARDO	CAMPBELL AREA-LOMBARDI	S	6	110	116	6,966	208,976	15,686	34,292	
	CAMPBELL AREA-AURIGNAC	S	17	112	129	8,196	245,887	117,838	262,186	2
DOMINGUEZ	DEL AMO ESTATE BLOCK	U	1	2	3	45	1,361		1,004	
HUNTINGTON BEACH	NORTH AREA-TAR BOLSA	U		5	5	68	2,052		893	
	NORTH AREA-ASHTON	U	1	20	21	196	5,874		5,845	
INGLEWOOD	VICKERS	U		9	9	170	5,100		1,823	
LONG BEACH	OLD AREA-UPPER POOLS	U	4	119	123	2,194	65,818		59,188	
	AIRPORT AREA	S		16	16	4,090	122,701	3,989*	380,532	1
MONTEBELLO	EAST AREA-NUTT	U		4	4	52	1,547		7,616	
	MAIN AREA-BALDWIN 1-2-3	U		22	22	238	7,134		11,117	
	WEST AREA	U		1	1	4	124		554	

COMPANY FIELD, AREA OR POOL	CLASS	NUMBER OF WELLS: SHUT IN	PRODUCING	TOTAL	CRUDE PRODUCTION: BARRELS DAILY	BARRELS	EXCESS OR SHORTAGE BARRELS	GAS PRODUCTION M.C.F	NO. WELLS: COMP	ABD.
RICHFIELD-EAST AREA	U		53	53	827	24,802		25,352		
SANTA FE SPRINGS-OTHERS	U	2	46	48	885	26,564		64,079		
TORRANCE-MAIN	U		24	24	305	9,151		9,063		
DEL AMO	U		6	6	58	1,740		1,919		
WILMINGTON-TOWN LOT-TAR-RANGER-TERMINAL	U		8	8	73	2,200		3,404		
OTHER FIELDS-LEFFINGWELL	U	1		1						
OLIVE	U		4	4	74	2,216		4,190		
SAN CLEMENTE	U									2
COMPANY TOTAL		178	1,299	1,477	39,380	1181,483	142,191	1580,235	4	2
TEXAS CONSOLIDATED OILS										
TINAQUAIC	U	3		3						
T. & F. OIL COMPANY										
EL SEGUNDO	U		2	2	43	1,290				
WILMINGTON-HARBOR-FB-IV-RANGER	U		1	1	8	250				
HARBOR-FBV-RANGER	U		3	3	31	941		39		
TOWN LOT-TAR-RANGER-TERMINAL	U		3	3	27	819		394		
COMPANY TOTAL			9	9	109	3,300		433		
THAHELD, FRED A., & ASSOCIATES										
HUNTINGTON BEACH-NORTH AREA-TAR BOLSA	U	1		1						
THIRD TWIN BELL SYNDICATE										
SANTA FE SPRINGS-OTHERS	U		1	1	16	476		2,240		
THOMAS, ADOLPH										
HUNTINGTON BEACH-NORTH AREA-ASHTON	U		1	1	3	100				
THOMPSON, JOE R.										
RICHFIELD-EAST AREA	U	1	1	2	1	35		90		
THORNBURY, WM., INC.										
BARDSDALE-SESPE	U		6	6	56	1,682		4,928		
TICKTIN, THEODORE J.										
HUNTINGTON BEACH-SOUTH ON-SHORE-MAIN	U		1	1	1	24				
TIDE WATER ASSOCIATED OIL COMPANY										
ANTELOPE HILLS-NORTH	U		4	4	123	3,699		50		
BELRIDGE NORTH-R SAND	S	1	2	3	16	470		78,256		
BUENA VISTA-BUENA VISTA FRONT	U		9	9	92	2,766		1,841		
BVH-ANTELOPE SHALE-W. DOME	S		1	1	104	3,120	930*	1,577		
BUENA VISTA HILLS-OTHERS	U	1	18	19	76	2,278		10,755		
CANFIELD GROUP-GOSFORD WEST-STEVENS	U		1	1	15	460		224		
COALINGA-EASTSIDE AREA-TEMBLOR	U	3	17	20	120	3,613				
WESTSIDE AREA-TEMBLOR	U	4	49	53	633	18,989				
JACALITOS-TEMBLOR	U		16	16	177	5,318		6,351		

COMPANY FIELD, AREA OR POOL	CLASS	NUMBER OF WELLS: SHUT IN	PRODUCING	TOTAL	CRUDE PRODUCTION: BARRELS DAILY	BARRELS	EXCESS OR SHORTAGE BARRELS	GAS PRODUCTION M.C.F	NO. WELLS COMP ABD.
WESTSIDE AREA-TEMBLOR	U							6,351	
JACALITOS-TEMBLOR	U		16	16	177	5,318			
KERN FRONT	U		18	18	94	2,834			
KERN RIVER	U	735	186	921	1,061	31,830			
LOST HILLS-MAIN	U	1	40	41	337	10,113		30	
WILLIAMSON	U	2	14	16	102	3,068		154	
G-1	U		4	4	22	669		377	
FARNSWORTH	U		1	1	7	207		135	
BELGIAN ANTICLINE NW-MORIQUI-PHACOIDES	S		7	7	1,593	47,799	12,023	22,421	2
MCKITTRICK	U	13	117	130	1,529	45,885		2,035	
MIDWAY-SUNSET-MIDWAY EAST-SHALLOW	U		3	3	25	745			
MIDWAY WEST-UPPER	U	7	73	80	1,061	31,830		2,850	
MOUNTAIN VIEW-MAIN AREA-OTHERS	U		2	2	30	910		333	
POSO CREEK GROUP-PREMIER MAIN AREA	U	3	9	12	162	4,850			
STRAND-STEVENS UPPER	U		8	8	94	2,830		2,985	
STRAND EAST-STEVENS	S		7	7	286	8,570	430*	8,620	
ALISO CANYON-ALISO	U	1	14	15	877	26,315		4,265	
PORTER	S	4	14	18	835	25,055	10,889	22,651	
DEL ALISO	S		4	4	502	15,049	4,493	14,110	
SESNON	S	8	15	23	879	26,363	5,903	37,968	
ZACA CREEK-MONTEREY	U	3	40	43	3,849	115,471		39,456	
VENTURA-C-BLOCK	U	8	141	149	5,749	172,466		208,088	
D-3	U		9	9	303	9,097		9,668	
D-4	U		6	6	170	5,106		2,822	
D-5,6 EAST	S	3	82	85	4,722	141,654	6,959	554,987	
D-6 WEST	S		2	2	56	1,667		7,243	
D-7 D-8	S	3	86	89	10,480	314,415	6,362	358,918	2
BREA OLINDA-OLINDA AREA	U	13	44	57	467	14,010		3,941	
COYOTE EAST-HUALDE	U		4	4	44	1,317		1,383	
ANAHEIM	U	2	12	14	194	5,815		5,492	
MIOCENE A	U		13	13	400	12,012		18,978	
DOMINGUEZ-EAST BLOCK-PLIOCENE OTHERS	U		10	10	228	6,849		4,658	
HUNTINGTON BEACH-NORTH AREA-ASHTON	U	2	8	10	46	1,392		1,150	
INGLEWOOD-VICKERS	U	2	31	33	855	25,638		8,102	
RINDGE	U		5	5	122	3,671		1,160	
MOYNIER	U		3	3	132	3,955		4,429	
SENTOUS	U		4	4	123	3,693		9,375	
POTRERO-EAST AREA	U	1	4	5	139	4,166		23,824	
RICHFIELD-EAST AREA	U		11	11	149	4,478		3,838	
SANTA FE SPRINGS-OTHERS	U		12	12	89	2,659		4,712	
SEAL BEACH-NORTH BLOCK-WASEM	U		2	2	35	1,063		471	

COMPANY FIELD, AREA OR POOL	CLASS	NUMBER OF WELLS			CRUDE PRODUCTION		EXCESS OR SHORTAGE BARRELS	GAS PRODUCTION M.C.F	NO.WELLS COMP ABD.
		SHUT IN	PRODUCING	TOTAL	BARRELS DAILY	BARRELS			
NORTH BLOCK-MCGRATH	S		4	4	492	14,773	3,334	23,457	
SOUTH BLOCK-BIXBY SELOVER	U	2	4	6	362	10,859		8,463	
SOUTH BLOCK-WASEM	U		5	5	134	4,023		5,669	
SOUTH BLOCK-MCGRATH	U		4	4	100	2,993		3,671	
COMPANY TOTAL		822	1,199	2,021	40,292	1208,877	48,603	1531,943	4
TIDE WATER ASSOCIATED OIL COMPANY#									
BUENA VISTA-BVH-ANTELOPE SHALE-W. DOME	S		1	1	209	6,285	90*	4,081	
FRESNO GROUP-RAISIN CITY-TAR-MIOCENE	U		3	3	85	2,540		1,177	
RAISIN CITY-MIOCENE	U	1	3	4	91	2,737		842	
RAISIN CITY-EOCENE	U		2	2	135	4,062		1,741	
KETTLEMAN NORTH DOME-TEMBLOR	S		1	1	34	1,027		2,446	
VAQUEROS	S		1	1	17	496		1,205	
ALISO CANYON-ALISO	U		1	1	21	628		194	
PORTER	S		3	3	375	11,247	4,889	4,823	
DEL ALISO	S		3	3	417	12,511	4,366	5,321	
SESNON	S	1	10	11	706	21,175	1,730*	30,776	
FREW EOCENE	U		1	1	64	1,911		1,740	
SEAL BEACH-NORTH BLOCK-MCGRATH	S		1	1	107	3,204	204	7,862	
COMPANY TOTAL		2	30	32	2,261	67,823	7,639	62,208	
TIDELAND OIL COMPANY									
LONG BEACH-OLD AREA-UPPER POOLS	U		1	1	10	300		591	
TIMCO OIL CO.									
LONG BEACH-OLD AREA-UPPER POOLS	U		1	1	8	240		446	
TOMPKINS & BROWN									
EDISON-PORTALS-FAIRFAX AREA-WICKER	U		1	1	8	236			
NEWHALL GROUP-TOWNSITE	U		1	1	7	200			
COMPANY TOTAL			2	2	15	436			
TOPA TOPA OIL COMPANY									
SESPE CANYON GRP-TOPA-TOPA	U		1	1	8	229		300	
TOWER PETROLEUM COMPANY									
HUNTINGTON BEACH-SOUTH OFF-SHORE-MAIN	U		1	1	21	633		660	
TRANS-WESTERN OIL COMPANY									
PIRU GROUP-HOPPER CANYON	U		1	1	2	75		400	
TRICO OIL & GAS COMPANY									
EDISON-EDISON GROVES AREA-SHIELDS ARMS	U		1	1	14	417			
FRUITVALE-MARTIN-KERNCO	U	1		1					
GREENACRES-BILLINGTON	U		2	2	10	308			
BELGIAN ANTICLINE-N W-PHACOIDES	S		1-						
	S	1	1	1					

COMPANY FIELD, AREA OR POOL	CLASS	NUMBER OF WELLS: SHUT IN	PRODUCING	TOTAL	CRUDE PRODUCTION: BARRELS DAILY	BARRELS	EXCESS OR SHORTAGE BARRELS	GAS PRODUCTION M.C.F	NO. WELLS: COMP	ABD.
N W-PT. OF ROCKS 1ST	U		1	1	2	71				
MIDWAY SUNSET-MIDWAY WEST-UPPER	U	4	25	29	175	5,254				
POSO CREEK GROUP-MCVAN	U	3	6	9	30	900				
ROUND MOUNTAIN GROUP-PYRAMID-VEDDER	U		10	10	40	1,187				
COMPANY TOTAL		9	45	54	271	8,137				
TRIGOOD OIL COMPANY										
DEL VALLE-KINLER AREA-DEL VALLE	U		4	4	60	1,814		420		
TRINITY OIL CORPORATION, LTD.										
LONG BEACH-OLD AREA-UPPER POOLS	U		1	1	20	594		557		
SEAL BEACH-ALAMITOS AREA	U		2	2	36	1,093		240		
COMPANY TOTAL			3	3	56	1,687		797		
TRI-PARTY PRODUCTION CORP-OPERATOR										
WILMINGTON-TOWN LOT-TAR-RANGER-TERMINAL	U		1	1	22	667		374		
TRIPLEX OIL COMPANY										
KERN RIVER	U	5	45	50	178	5,340				
T. & T. OIL COMPANY										
EDISON-JEPPI	U		1	1	98	2,943		3,565		
RICHFIELD-EAST AREA	U		3	3	36	1,066		362		
COMPANY TOTAL			4	4	134	4,009		3,927		
TUCKER & WITHERS										
LONG BEACH-OLD AREA-UPPER POOLS	U		3	3	73	2,186		981		
HUNTINGTON BEACH-NORTH AREA-ASHTON	U	1	2	3	23	688		859		
SOUTH ON-SHORE-MAIN	U	1		1						
COMPANY TOTAL		2	2	4	23	688		859		
TURCO PRODUCTS, INC.										
WILMINGTON-TOWN LOT-TAR-RANGER-TERMINAL	U		1	1	11	330		57		
TURF OIL COMPANY										
POTRERO-EAST AREA	U		2	2	13	400		2,679		
TURNER OIL COMPANY										
SESPE CANYON GRP-TOPA-TOPA	U		2	2	11	342				
TURNER PETROLEUM COMPANY										
LONG BEACH-OLD AREA-UPPER POOLS	U		3	3	17	520		1,773		
T. W. OIL COMPANY										
PLACERITA-OLD AREA	U		3	3	45	1,350				
T. W. & E. M. OIL COMPANY										
LONG BEACH-OLD AREA-UPPER POOLS	U		1	1	18	533		194		
TWENTIETH CENTURY OIL COMPANY										
PLACERITA-JUANITA AREA	U	2	4	6	66	1,971				
TWIN OIL COMPANY										
LONG BEACH-OLD AREA-UPPER POOLS	U		2	2	16	483		210		

65499 O—55—22

COMPANY FIELD, AREA OR POOL	CLASS	NUMBER OF WELLS: SHUT IN	PRODUCING	TOTAL	CRUDE PRODUCTION: BARRELS DAILY	BARRELS	EXCESS OR SHORTAGE BARRELS	GAS PRODUCTION M.C.F	NO. WELLS: COMP	ABD.
UNION OIL COMPANY OF CALIFORNIA										
BELRIDGE NORTH-SHALLOW	U	4	9	13	33	988				
BELRIDGE SOUTH	U	4	2	6	26	786				
BUENA VISTA-BUENA VISTA FRONT	U	1	1	2	4	135				
BUENA VISTA HILLS-OTHERS	U	3	12	15	187	5,597		1,674		
CANFIELD GROUP-GOSFORD EAST-STEVENS	S		10	10	407	12,221	261	23,589		
COALINGA-WESTSIDE AREA-TEMBLOR	U		4	4	60	1,786				
GUIJARRAL HILLS-LEDA NORTH	S		11	11	3,125	93,749	9,492	77,595	1	
JACALITOS-TEMBLOR	U	2		2						
EDISON-MAIN AREA-UPPER	U		2	2	11	331		94		
MAIN AREA-FRACTURED SCHIST	U		5	5	561	16,827		1,946		
KERN FRONT	U	1	6	7	37	1,120		150		
LOST HILLS-FARNSWORTH	U		2	2	12	369				
BELGIAN ANTICLINE-N W-OCEANIC	S		1-							
	S	1	11	11	1,012	30,349		66,777		
N W-PT. OF ROCKS 1ST	U		1	1	4	114		188		
N W-PT. OF ROCKS 2ND	S		1-							
	S		3	2	137	4,123		18,778		
N W-PT. OF ROCKS 3RD	U	1	3	4	7	224		110,367		
CYMRIC-MCKITTRICK FRONT-UPPER	U		3	3	41	1,222				
WELPORT AREA-SHALLOW	U	1	1	2	1	32				
WELPORT AREA-FITZGERALD	U		3	3	24	722		1,576		
WELPORT AREA-ANDERSON	U		3	3	38	1,141		2,264		
MIDWAY SUNSET-MIDWAY EAST-SHALLOW	U	18	29	47	242	7,250		5,510		
MIDWAY EAST-MARICOPA FLAT	U		1	1	2	60		60		
MIDWAY WEST-UPPER	U	5	29	34	218	6,527		690		
MIDWAY WEST-QUALITY	U		12	12	230	6,899		718		
MOUNT POSO GROUP-BAKER-VEDDER	U		5	5	66	1,980				
MOUNT POSO-VEDDER	U	9	45	54	618	18,533		1,500		
RIO BRAVO-HELBLING	S		2	2	425	12,738	1,039	4,225		
TEJON GROUP-TEJON FLAT	U		1	1	12	374		150		
BARDSDALE-SESPE	U	4	38	42	148	4,449		12,597		
EOCENE	U	2	15	17	379	11,378		64,416		
LAS LLAJAS-EOCENE	U		2	2	8	255		90		
OAKRIDGE-MIOCENE	S	2	40	42	2,448	73,454	10,304	53,262		
SANTA PAULA GRP-ADAMS CANYON	U	1	5	6	9	278		90		
SANTA PAULA CANYON	U	5	8	13	5	136		90		
WHEELER CANYON	U	4	4	8	12	346		90		
SESPE CANYON GRP-TAR CREEK	U	2	11	13	35	1,039		720		

COMPANY FIELD, AREA OR POOL	CLASS	NUMBER OF WELLS			CRUDE PRODUCTION		EXCESS OR SHORTAGE BARRELS	GAS PRODUCTION M.C.F	NO. WELLS
		SHUT IN	PRODUCING	TOTAL	BARRELS DAILY	BARRELS			COMP ABD.
SIMI-SESPE-EOCENE	U	1	12	13	107	3,204		450	
SOUTH MOUNTAIN-SESPE	U	1	41	42	2,206	66,167		41,842	1
TAPO CANYON SOUTH-TERRY	S	1	11	12	1,599	47,958	14,028	20,936	
SESPE	U	1	5	6	134	4,026		2,655	
TORREY CANYON-UPPER SESPE	U	18	50	68	290	8,715		5,572	
LOWER SESPE	S		16	16	3,147	94,404	7,146*	145,258	
WELDON CANYON	U		2	2	103	3,076		1,740	
WEST MOUNTAIN-SESPE	U		1	1	7	200		90	
CASMALIA-SISQUOC-MONTEREY	U	16	41	57	718	21,529		13,343	
ARELLANES	U		2	2	24	732		4,230	
CAT CANYON EAST-SISQUOC-MONTEREY	U	2		2					
CAT CANYON WEST-PLIOCENE	U	16	72	88	2,398	71,954		37,879	
LOS FLORES	S	12	82	94	7,011	210,328	45,541	184,915	1
OLIVERA CANYON	U	1		1					
GUADALUPE-SISQUOC KNOXVILLE	S	2	41	43	2,286	68,587	567	59,519	1
JESUS MARIA	U	5		5					
LOMPOC-MONTEREY	S	24	102	126	3,313	99,390	19,705*	134,830	
ORCUTT	U	55	187	242	2,933	87,985		145,533	
SANTA MARIA VALLEY-MAIN	U	31	224	255	5,098	152,935		344,103	
BREA OLINDA-BREA AREA-OTHERS	U	7	41	48	1,583	47,503		36,641	
OLINDA AREA	U	3	56	59	3,208	96,233		69,821	
OLINDA EAST AREA	U		1	1	8	249		95	
TONNER AREA	S	4	37	41	2,312	69,360	9,093	92,574	
COYOTE EAST-HUALDE	U	1	1	2	17	499		319	
ANAHEIM	U	9	64	73	1,992	59,769		61,763	
MIOCENE A	U		4	4	187	5,617		5,778	
STERN	U		33	33	1,298	38,946		53,932	
DOMINGUEZ-EAST BLOCK-PLIOCENE 3,4&U-5	U	1	3	4	62	1,859		2,653	
EAST BLOCK-PLIOCENE L-5 & 6	U		1	1	29	864		567	
EAST BLOCK-PLIOCENE OTHERS	U	4	4	8	87	2,600		2,592	
EAST CENTRAL BLOCK-PLIOCENE	U	16	36	52	780	23,415		26,356	
EAST CENTRAL-MIOCENE 8&C	U	1		1					
SOUTHEAST BLOCK-MIOCENE	U		6	6	202	6,074		9,441	
WEST CENTRAL BLOCK-PLIOCENE	U	6	46	52	1,110	33,288		50,106	
WEST CENTRAL BLOCK-MIOCENE 7	U	1	13	14	162	4,866		15,185	1
WEST CENTRAL BLOCK-MIOCENE 8	U	1	14	15	326	9,789		39,932	
WEST CENTRAL-MIOCENE 7&8 SO	U	1	3	4	51	1,524		1,519	
WEST BLOCK-PLIOCENE OTHERS	U	1	4	5	108	3,230		3,497	
WEST BLOCK-MIOCENE 6,7&8	S	12	63	75	1,781	53,435		80,639	1

COMPANY FIELD, AREA OR POOL	CLASS	NUMBER OF WELLS: SHUT IN	PRODUCING	TOTAL	CRUDE PRODUCTION: BARRELS DAILY	BARRELS	EXCESS OR SHORTAGE BARRELS	GAS PRODUCTION M.C.F	NO. WELLS: COMP	ABD.
WEST BLOCK-PLIOCENE 5	S	3	6	9	481	14,443	2,743	13,762		
HUNTINGTON BEACH-NORTH AREA-ASHTON	U	1	22	23	292	8,761		5,907		
LONG BEACH-OLD AREA-UPPER POOLS	U	3	17	20	211	6,330		7,640		
OLD AREA-DE SOTO SOUTH FLANK	U		1	1	38	1,128		588		
NORTHWEST EXTENSION AREA	U	1	3	4	34	1,027		448		
MONTEBELLO-MAIN AREA-BALDWIN 1-2-3	U	1	4	5	56	1,685		872		
WEST AREA	U	19	21	40	210	6,307		14,466		
PLAYA DEL REY-DEL REY HILLS AREA	U	5	4	9	63	1,891		62,269		
VENICE AREA	U		7	7	266	7,979		17,949		
RICHFIELD-EAST AREA	U	9	69	78	650	19,498		21,847		
NORTH AREA	U		1	1	34	1,013		671		
WEST AREA	U	8	43	51	1,257	37,710		19,141		
ROSECRANS-ATHENS AREA-UPPER	U	2	8	10	99	2,979		4,788		
ATHENS AREA-LOWER	U	2	11	13	109	3,278		6,007		
ATHENS AREA-O DEA	U		4	4	66	1,975		2,044		
MAIN AREA-MAXWELL-HOGE	U	1	5	6	73	2,198		1,693		
MAIN AREA-ZINS	U	3	12	15	185	5,539		17,548		
MAIN AREA-O DEA	U	5	21	26	279	8,363		25,495		
MAIN AREA-8TH	U	1	3	4	77	2,299		5,777		
SOUTH AREA-O DEA	U		1	1	23	687		2,510		
SOUTH AREA-8TH	U		1	1	23	705		3,214		
SANSINENA-EAST AREA-MIOCENE C	S		13	13	2,870	86,101	16,301	69,640	1	
EAST AREA-MIOCENE D	S		7	7	534	16,032	362	25,820		
LINDAUER AREA-MIOCENE A	U	1	1	2	32	952		435		
NARANJAL AREA-MIOCENE A	U	1	9	10	610	18,315		37,686		
NARANJAL AREA-MIOCENE C	U		3	3	391	11,743		18,318	1	
WEST-MAIN BLOCK-MIOCENE C-D	S		58	58	5,164	154,934	2,834	143,949		
WEST-6-A BLOCK-MIOCENE C-D	U		2	2	61	1,834		462		
WEST-NEW ENGLAND-MIOCENE D	U		1	1	7	201		155		
WEST-CURTIS BLOCK-MIOCENE C-D	U	1	2	3	94	2,821		1,607		
OTHER AREAS-PLIOCENE	U	1	1	2	3	88			1	
OTHER AREAS-MIOCENE	U	5		5						
SANTA FE SPRINGS-OTHERS	U	24	140	164	3,623	108,694		171,982		
COMPANY TOTAL		421	2,157	2,578	75,176	2255,352	85,714	2850,201	9	
UNION OIL COMPANY OF CALIFORNIA#										
FRESNO GROUP-RAISIN CITY-TAR-MIOCENE	U		2	2	85	2,540		1,177		
RAISIN CITY-MIOCENE	U	1	3	4	91	2,737		841		
RAISIN CITY-EOCENE	U		2	2	135	4,062		1,740		
DOMINGUEZ-EAST BLOCK-PLIOCENE 3,4&U-5	U		8	8	275	8,246		6,831		

COMPANY FIELD, AREA OR POOL	CLASS	NUMBER OF WELLS			CRUDE PRODUCTION		EXCESS OR SHORTAGE BARRELS	GAS PRODUCTION M.C.F	NO. WELLS	
		SHUT IN	PRODUCING	TOTAL	BARRELS DAILY	BARRELS			COMP	ABD.
EAST BLOCK-PLIOCENE L-566	U		5	5	137	4,124		8,251		
EAST BLOCK-PLIOCENE OTHERS	U	4	19	23	527	15,807		7,605		
EAST CENTRAL BLOCK-PLIOCENE	U	4	11	15	383	11,493		6,577		
EAST CENTRAL-MIOCENE 8&C	U				2	52		316		
WEST CENTRAL BLOCK-PLIOCENE	U	2	4	6	119	3,575		4,934		
WEST CENTRAL BLOCK-MIOCENE 7	U				3	101		371		
WEST CENTRAL BLOCK-MIOCENE 8	U		2	2	69	2,085		7,583		
WEST CENTRAL-MIOCENE 7-8 SO	U	1	6	7	131	3,942		9,293		
LONG BEACH-AIRPORT AREA	S		4	4	1,542	46,264	19,115	191,253	1	
COMPANY TOTAL		12	66	78	3,499	105,028	19,115	246,772	1	
UNION PACIFIC RAILROAD COMPANY										
WILMINGTON-TERMINAL-FB-I-TAR-RGR-TERM	U	6	90	96	4,242	127,258		77,778	3	
TERMINAL-FB-I-FORD	U	3	20	23	474	14,229		27,795		
TERMINAL-FB-I-237	U	2	13	15	320	9,598		13,692		
TERMINAL-FB-II-TAR RANGER	U	2	91	93	2,455	73,652		64,081		
TERMINAL-FB-II-UP	U	2	8	10	207	6,198		15,951		
TERMINAL-FB-II-FORD	U	3	18	21	335	10,064		32,110		3
TERMINAL-FB-II-237	U	2	12	14	371	11,120		16,642		
TERMINAL-FB-IIB-TERMINAL U&L	S	1	19	20	2,151	64,536	25,386	38,734		
TERMINAL-FB-III-TAR RANGER	S	7	102	109	4,833	144,993	8,046	136,980		3
TERMINAL-FB-III-UPPER TERM	S	2	42	44	6,471	194,140	45,700	131,507	1	1
TERMINAL-FB-III-LOWER TERM	S		21	21	1,085	32,544	6,954	44,631		1
HARBOR-FB-IV-TAR	U		8	8	232	6,961		7,120		
HARBOR-FB-IV-RANGER	U	3	22	25	795	23,847		22,002	1	
HARBOR-FB-IV-TERMINAL U&L	U	2	57	59	3,409	102,264		66,212	1	
HARBOR-FB-IV-UP	U		14	14	297	8,915		12,368		
HARBOR-FB-IVA-237	U	4	7	11	292	8,759		12,805		
HARBOR-FB-IVB-237	U	1	1	2	10	309		418		
HARBOR-FB-IVAB-FORD	U	2	7	9	257	7,702		15,083	1	
HARBOR-FBV-RANGER	U		1	1	84	2,522		1,722		
TOWN LOT-TAR-RANGER-TERMINAL	U	1	20	21	616	18,489		12,998		
TOWN LOT-FORD	U	1	2	3	38	1,126		1,090		
COMPANY TOTAL		44	575	619	28,974	869,226	86,086	751,719	510	
UNITED DRILLING COMPANY										
PIRU GROUP-HOPPER CANYON	U	4	6	10	7	200		100		
UNITED OIL WELL SUPPLY COMPANY										
FRUITVALE-MARTIN-KERNCO	U	2	1	3	3	88				
U. S. ROYALTY OIL CORPORATION										
LONG BEACH-OLD AREA-UPPER POOLS	U	2	13	15	149	4,478		3,644		

COMPANY FIELD, AREA OR POOL	CLASS	NUMBER OF WELLS			CRUDE PRODUCTION		EXCESS OR SHORTAGE BARRELS	GAS PRODUCTION M.C.F	NO. WELLS COMP ABD.
		SHUT IN	PRODUCING	TOTAL	BARRELS DAILY	BARRELS			
UNIVERSAL CONSOLIDATED OIL COMPANY									
COALINGA-EASTSIDE AREA-TEMBLOR	U	1	17	18	116	3,494			
FRESNO GROUP-RAISIN CITY-TAR-MIOCENE	U		3	3	402	12,070		2,460	
RAISIN CITY-MIOCENE	U		3	3	577	17,310		3,835	
RAISIN CITY-EOCENE	U		2	2	76	2,270		4,745	
LOST HILLS-MAIN	U	6	115	121	835	25,054		30,311	
G-1	U		12	12	94	2,809		3,287	
CYMRIC-WELPORT AREA-SHALLOW	U		3	3	14	430			
WELPORT AREA-OCEANIC	U	2	3	5	97	2,897			
WELPORT AREA-WOODY	U	1	1	2	2	60			
MIDWAY SUNSET-MIDWAY WEST-UPPER	U	2	10	12	65	1,960			
ALFERITZ-STRODE	U		3	3	4	132			
MILLER	U		1	1	15	444			
RAMONA-KERN DEL VALLE	S		11	11	118	3,529		21,501	
BEVERLY HILLS-20TH CENTURY-FOX	S	4	1	5	77	2,318	10,102*	900	1
ROSECRANS-MAIN AREA-ZINS	U		1	1	23	700		1,860	
MAIN AREA-O DEA	U		7	7	127	3,825		10,200	
MAIN AREA-8TH	U		3	3	30	900		2,400	
SANSINENA-WEST-CURTIS BLOCK-MIOCENE C-D	U		3	3	71	2,131		1,571	
SANTA FE SPRINGS-OTHERS	U	4	5	9	27	800		2,050	
WILMINGTON-HARBOR-FB-IV-RANGER	U		1	1	50	1,500		300	
HARBOR-FB-IV-TERMINAL U&L	U		3	3	47	1,400		250	
HARBOR-FBV-RANGER	U		5	5	30	915		180	
COMPANY TOTAL		20	213	233	2,697	86,948	10,102*	85,850	1
UNIVERSAL CONSOLIDATED OIL COMPANY#									
OTHER FIELDS-CALDER-STEVENS	U		1	1	49	1,466		2,048	
UTAH OIL & DRILLING COMPANY									
LONG BEACH-OLD AREA-UPPER POOLS	U		1	1	7	218		89	
WILMINGTON-TOWN LOT-TAR-RANGER-TERMINAL	U		1	1	6	179		95	
COMPANY TOTAL			2	2	13	397		184	
V. A. OIL COMPANY									
ROUND MT. GROUP-COFFEE CANYON-VEDDER	U		5	5	30	890			
VALLEY PRODUCING COMPANY									
FRESNO GROUP-HELM-LANARE AREA-MIOCENE	U		1	1	2	50		16	
VANDERLAAN, T. F.									
SANSINENA-WEST-NEW ENGLAND-MIOCENE D	U		3	3	45	1,360		600	
VANGUARD OIL COMPANY									
MOUNT POSO GROUP-BAKER-VEDDER	U	2	12	14	80	2,393			
VANRAY OIL COMPANY									
ROUND MOUNTAIN GROUP-SHARKTOOTH-VEDDER	U		2	2	7	220			

COMPANY FIELD, AREA OR POOL	CLASS	NUMBER OF WELLS: SHUT IN	NUMBER OF WELLS: PRODUCING	NUMBER OF WELLS: TOTAL	CRUDE PRODUCTION: BARRELS DAILY	CRUDE PRODUCTION: BARRELS	EXCESS OR SHORTAGE BARRELS	GAS PRODUCTION M.C.F	NO. WELLS COMP. ABD.
VEDDER, DWIGHT G.									
MOUNT POSO GROUP-SECTION 18-VEDDER	U		4	4	113	3,388			
VEDDER, DWIGHT G., & PARKFORD E. A.									
KERN BLUFF	U	1	28	29	308	9,235			
VEDDER PETROLEUM CORPORATION, LTD.									
KERN BLUFF	U		6	6	28	837			
MIDWAY-SUNSET-MIDWAY WEST-UPPER	U		3	3	14	418			
MOUNT POSO GROUP-DOMINION-VEDDER	U	1	2	3	14	420			
COMPANY TOTAL		1	11	12	56	1,675			
VENTURA OIL COMPANY									
KERN RIVER	U		4	4	21	616			
VESTA PETROLEUM COMPANY, LTD.									
TORRANCE-MAIN	U		3	3	49	1,475		954	
DEL AMO	U		1	1	9	285		400	
COMPANY TOTAL			4	4	58	1,760		1,354	
VICTORY OIL COMPANY									
CYMRIC-WELPORT AREA-SHALLOW	U	10	59	69	689	20,675			
MIDWAY SUNSET-MIDWAY WEST-UPPER	U	1	13	14	160	4,811			
VENTURA-C-BLOCK	U		3	3	35	1,053		4,636	
LONG BEACH-OLD AREA-UPPER POOLS	U		6	6	117	3,506		2,119	
NORTHWEST EXTENSION AREA	U		2	2	16	485		403	
TORRANCE-MAIN	U		4	4	43	1,278		995	
WILMINGTON-HARBOR-FB-IV-RANGER	U		1	1	20	587		303	
TOWN LOT-TAR-RANGER-TERMINAL	U		1	1	18	544		180	
COMPANY TOTAL		11	89	100	1,098	32,939		8,636	
VICTORY OIL COMPANY#									
LONG BEACH-OLD AREA-WARDLOW	U		1	1	47	1,415		1,861	
VICTORY OIL COMPANY, OPERATIONS ACCOUNT									
LONG BEACH-OLD AREA-UPPER POOLS	U		3	3	43	1,287		4,090	
OLD AREA-WARDLOW	U		4	4	57	1,722		7,402	
COMPANY TOTAL			7	7	100	3,009		11,492	
VINCENT MARION									
SARGENT	U	2		2					
VIRGINIA DARE OIL COMPANY									
LONG BEACH-OLD AREA-UPPER POOLS	U		4	4	80	2,408		594	
VIRGINIA OIL & LAND COMPANY									
KERN RIVER	U	1	69	70	356	10,666			
VIRMARK OIL COMPANY									
TORRANCE-MAIN	U	1	1	2	7	221			

COMPANY FIELD, AREA OR POOL	CLASS	NUMBER OF WELLS: SHUT IN	PRODUCING	TOTAL	CRUDE PRODUCTION: BARRELS DAILY	BARRELS	EXCESS OR SHORTAGE BARRELS	GAS PRODUCTION M.C.F	NO. WELLS COMP ABD
VI-ROI OIL & ASSOCIATES NO. 2									
TORRANCE-MAIN	U		1	1	14	416		30	
VI-ROI OIL COMPANY									
LONG BEACH-OLD AREA-UPPER POOLS	U	1		1					
TORRANCE-MAIN	U	1	1	2	15	436		60	
DEL AMO	U		1	1	6	170		119	
COMPANY TOTAL		2	2	4	21	606		179	
VIRSAL OIL COMPANY									
BELRIDGE NORTH-SHALLON	U	2	5	7	53	1,601			
VOLUNTEER PETROLEUM COMPANY									
OJAI GROUP-SISAR-SILVERTHREAD	U	1		1					
PIRU GROUP-EUREKA	U	3	6	9	2	66		10	
SESPE CANYON GRP-TAR CREEK	U	4		4					
COMPANY TOTAL		8	6	14	2	66		10	
VON BREYMAN, EUGENE MILLER									
KERN RIVER	U	2	4	6	13	400			
WAGONER OIL COMPANY									
TORRANCE-MAIN	U		1	1	7	207			
WILMINGTON-HARBOR-FBV-RANGER	U		1	1	10	300			
TOWN LOT-TAR-RANGER-TERMINAL	U		5	5	38	1,142		150	
COMPANY TOTAL			7	7	55	1,649		150	
WALLACE, JAMES A.									
COALINGA-WESTSIDE AREA-TEMBLOR	U	7		7					
WA-ME-CO DRILLING COMPANY									
PETALUMA	U	2	1	3	1	28			
WARD OIL COMPANY									
COALINGA-WESTSIDE AREA-TEMBLOR	U		10	10	34	1,027		570	
WARD PRODUCTION ASSOCIATES									
PLACERITA-JUANITA AREA	U	2	2	4	51	1,536			
WATERFLOOD OIL COMPANY									
NEWHALL GROUP-TOWSLEY CANYON	U	7	5	12	8	240			
PIRU GROUP-TAPO CANYON	U	3	14	17	85	2,555			
COMPANY TOTAL		10	19	29	93	2,795			
WATERS & ASSOCIATES									
FRUITVALE-MARTIN-KERNCO	U		2	2	27	810			
WATERS & COMPANY									
FRUITVALE-MARTIN-KERNCO	U		3	3	15	450			
WATERS, J. A., COMPANY									
FRUITVALE-MARTIN-KERNCO	U		2	2	10	300			

COMPANY FIELD, AREA OR POOL	CLASS	NUMBER OF WELLS: SHUT IN	NUMBER OF WELLS: PRODUCING	NUMBER OF WELLS: TOTAL	CRUDE PRODUCTION: BARRELS DAILY	CRUDE PRODUCTION: BARRELS	EXCESS OR SHORTAGE BARRELS	GAS PRODUCTION M.C.F	NO. WELLS COMP ABD.
WATKINS-CHAPRO OIL OPERATIONS									
LONG BEACH-OLD AREA-UPPER POOLS	U		1	1	7	213			
WATKINS & DOLLEY, OPERATORS									
PLACERITA-JUANITA AREA	U		1	1	3	101			
WATKINS & LARNER									
HUNTINGTON BEACH-SOUTH ON-SHORE-MAIN	U		1	1	7	200			
WATKINS, R. B.									
NEWHALL GROUP-TUNNEL	U		1	1	7	202			
HUNTINGTON BEACH-HUNTINGTON AVE-JONES	S		4	4	208	6,241	263	6,000	1
SOUTH ON-SHORE-JONES	U	1		1					
COMPANY TOTAL		1	5	6	215	6,443	263	6,000	1
WATKINS, R. B., OPERATIONS									
NEWPORT WEST-ALDRICH AREA-C	U	1		1					
SURF AREA-EAST BLOCK	U		3	3	137	4,125			1
COMPANY TOTAL		1	3	4	137	4,125			1
WATKINS & RECKNAGEL									
MONTEBELLO-WEST AREA	U		2	2	14	420		808	
WATKINS & TUNSTALL									
HUNTINGTON BEACH-SOUTH ON-SHORE-TAR	U		2	2	17	497		60	
WATMAC OIL COMPANY									
PLACERITA-JUANITA AREA	U		1	1	2	51			
MONTEBELLO-EAST AREA-CRUZ	U		1	1	9	261			
COMPANY TOTAL			2	2	11	312			
WEAVER, D. W.									
HUNTINGTON BEACH-NORTH AREA-ASHTON	U		3	3	42	1,260			
WEBER-BUTLER OIL COMPANY									
TORRANCE-MAIN	U	1	2	3	13	400		757	
WEBSTER & ASSOCIATES									
LONG BEACH-OLD AREA-UPPER POOLS	U		1	1	15	450		150	
WEIR OIL CO.									
HUNTINGTON BEACH-NORTH AREA-ASHTON	U	1		1					
WEKOIL COMPANY									
LONG BEACH-OLD AREA-UPPER POOLS	U		1	1	4	125		64	
WERTALLA, MARY E.									
TORRANCE-MAIN	U		1	1	6	176		34	
WESCO OIL COMPANY									
CASMALIA-SISQUOC-MONTEREY	U	2	3	5	19	584			
WEST, A. J., OPERATOR									
BELGIAN ANTICLINE NW-MORIGUI-PHACOIDES	S		12	12	2,505	75,141	831	42,088	1

COMPANY FIELD, AREA OR POOL	CLASS	NUMBER OF WELLS			CRUDE PRODUCTION		EXCESS OR SHORTAGE BARRELS	GAS PRODUCTION M.C.F	NO. WELLS	
		SHUT IN	PRODUCING	TOTAL	BARRELS DAILY	BARRELS			COMP	ABD.
WEST AMERICAN OIL COMPANY										
HUNTINGTON BEACH-NORTH AREA-ASHTON	U		9	9	90	2,698		1,339		
LONG BEACH-OLD AREA-UPPER POOLS	U		3	3	41	1,243		729		
COMPANY TOTAL			12	12	131	3,941		2,068		
WEST, CHARLES W.										
SANTA PAULA GRP-TIMBER CANYON-MAIN	U	1	2	3	17	504				
WEST CRUDE OIL COMPANY										
COALINGA-WESTSIDE AREA-TEMBLOR	U		24	24	16	483				
KERN RIVER	U	1	36	37	125	3,764				
COMPANY TOTAL		1	60	61	141	4,247				
WEST, HOMER F.										
OTHER FIELDS-DEER CREEK	U		4	4	52	1,565				
WEST, L. B.										
TORRANCE-MAIN	U	1		1						
WEST SHORE PETROLEUM COMPANY										
HUNTINGTON BEACH-SOUTH OFF-SHORE-MAIN	U		1	1	11	319		441		
WEST SIDE OIL & GAS CO.										
MIDWAY SUNSET-MIDWAY EAST-SHALLOW	U		8	8	93	2,790		1,752		
WESTATES PETROLEUM CORPORATION										
COALINGA-WESTSIDE AREA-TEMBLOR	U	3	108	111	488	14,634		959		
KERN FRONT	U	3	11	14	79	2,384				
KERN RIVER	U	3	11	14	47	1,408				
MIDWAY SUNSET-MIDWAY WEST-REPUBLIC	U		5	5	24	721				
POSO CREEK GROUP-PREMIER MAIN AREA	U	1	31	32	310	9,287				
LONG BEACH-OLD AREA-UPPER POOLS	U	2	27	29	414	12,407		7,009		1
COMPANY TOTAL		12	193	205	1,362	40,841		7,968		1
WESTERN EMPIRE PETROLEUM COMPANY										
TORRANCE-MAIN	U		3	3	16	485		478		
WILMINGTON-HARBOR-FB-IV-RANGER	U	1	4	5	42	1,256		785		
COMPANY TOTAL		1	7	8	58	1,741		1,263		
WESTERN GULF OIL COMPANY										
FRESNO GROUP-RAISIN CITY-MIOCENE	U		1	1	19	575		100		
FRUITVALE-MARTIN-KERNCO	U	14	159	173	6,364	190,909		114,998	3	
MIDWAY SUNSET-SANTIAGO-SHALLOW	U	1	1	2	3	90				
SANTIAGO-LEUTHOLTZ	S	1	6	7	549	16,477	3,937	20,435		
PALOMA-MAIN AREA-PALOMA CRUDE OIL	S	3	7	10	75	2,251		30,758		
SYMONS AREA-SYMONS	U	1	5	6	18	542		23,721		
SYMONS AREA-PALOMA	U		1	1	47	1,424		2,625		
OAK CANYON-1-A	U		3	3	27	813		1,386		

COMPANY FIELD, AREA OR POOL	CLASS	NUMBER OF WELLS: SHUT IN	PRODUCING	TOTAL	CRUDE PRODUCTION: BARRELS DAILY	BARRELS	EXCESS OR SHORTAGE BARRELS	GAS PRODUCTION M.C.F	NO. WELLS: COMP. ABD.
3-AB	U	1	2	3	195	5,841		11,162	
4-AB	S		1-						
	S		3	2	145	4,347	253*	9,738	
5-A	S		1-						
	S		9	8	520	15,601	2,543	32,256	
OAK CANYON-6-AB,7&8-AB	U		2	2	168	5,027		8,116	
YORBA LINDA-SHALLOW	U		16	16	339	10,176			3
SMITH	U		4	4	167	5,020		1,860	
COMPANY TOTAL		21	217	238	8,636	259,093	6,227	257,155	6
WESTERN PETROLEUM COMPANY									
EDISON-PORTALS-FAIRFAX AREA-WICKER	U		2	2	16	481			
MIDWAY SUNSET-MIDWAY WEST-UPPER	U		1	1	12	350			1
COMPANY TOTAL			3	3	28	831			1
WESTERN STATES DRILLING COMPANY									
HUNTINGTON BEACH-SOUTH ON-SHORE-MAIN	U	1		1					
SOUTH OFF-SHORE-MAIN	U		1	1	26	781		1,858	
COMPANY TOTAL		1	1	2	26	781		1,858	
WESTKERN OIL CORPORATION									
EDISON-WEST AREA	U		2	2	27	810			
KERN BLUFF	U		6	6	41	1,219			
TORRANCE-MAIN	U	1	12	13	64	1,918		740	
WILMINGTON-TOWN LOT-TAR-RANGER-TERMINAL	U	1	10	11	93	2,785		1,795	
COMPANY TOTAL		2	30	32	225	6,732		2,535	
WESTLAKE OIL COMPANY									
FRUITVALE-MARTIN-KERNCO	U	1	3	4	22	672			
KERN RIVER	U	1	11	12	62	1,864			
COMPANY TOTAL		2	14	16	84	2,536			
WESTPORT OIL COMPANY									
TORRANCE-MAIN	U		1	1	8	244		243	
WESTWOOD OIL PRODUCING COMPANY, LTD.									
TORRANCE-MAIN	U		1	1	9	262			
WHISTON, H. L., SR.									
FRUITVALE-MARTIN-KERNCO	U	1	3	4	6	175			
WHITE DISTRIBUTING CO.									
HUNTINGTON BEACH-HUNTINGTON AVE-JONES	S		1	1	10	300	106*	150	1
WHITEHILL, RALPH									
FRUITVALE-MARTIN-KERNCO	U		1	1	4	120			
MOUNT POSO GROUP-MOUNT POSO-VEDDER	U		3	3	20	600			
COMPANY TOTAL			4	4	24	720			
WHITTENBERG, M. C.									
FRUITVALE-MARTIN-KERNCO	U		2	2	38	1,150			

COMPANY FIELD, AREA OR POOL	CLASS	NUMBER OF WELLS			CRUDE PRODUCTION		EXCESS OR SHORTAGE BARRELS	GAS PRODUCTION M.C.F	NO. WELLS	
		SHUT IN	PRODUCING	TOTAL	BARRELS DAILY	BARRELS			COMP	ABD.
WHITTIER ASSOCIATES										
BARHAM RANCH	U	3		3						
WHITTIER, M. H., COMPANY										
COALINGA-WESTSIDE AREA-TEMBLOR	U	7	67	74	264	7,935		2,010		
FRUITVALE-MARTIN-KERNCO	U		4	4	23	684		55		
KERN FRONT	U	2	13	15	121	3,637		505		
LOST HILLS-MAIN	U		38	38	226	6,787		500		
MIDWAY SUNSET-MIDWAY EAST-SHALLOW	U	1	3	4	26	788				
MIDWAY WEST-UPPER	U	4	57	61	767	23,014		378		
POSO CREEK GROUP-PREMIER MAIN AREA	U		4	4	11	338		32		
COMPANY TOTAL		14	186	200	1,438	43,183		3,480		
WILBUR, V. R. G.										
HUNTINGTON BEACH-NORTH AREA-ASHTON	U		5	5	50	1,494		865		
LONG BEACH-OLD AREA-UPPER POOLS	U		7	7	46	1,394		2,283		
TORRANCE-MAIN	U	1	2	3	9	282		200		
WILMINGTON-TOWN LOT-TAR-RANGER-TERMINAL	U		20	20	263	7,894		5,500	1	
COMPANY TOTAL		1	34	35	368	11,064		8,848	1	
WILLETT, P. W.										
TORRANCE-MAIN	U		1	1	14	411				
WILLIAMS, RUSSELL L.										
SUMMERLAND	U	7	1	8	10	301				
WILLMAX OIL COMPANY										
MIDWAY SUNSET-MIDWAY WEST-UPPER	U	1	10	11	81	2,425		240		
WILRICH DEVELOPMENT CO.										
FRUITVALE-MARTIN-KERNCO	U		2	2	20	587				
MCDONALD ANTICLINE-BACON HILLS AREA	U	3		3						
LAYMAN AREA	U	1		1						
SALT CREEK WEST AREA-SALT CREEK	U		4	4	7	200				
MOUNT POSO GROUP-MOUNT POSO-GILL	U	2		2						
MOUNTAIN VIEW-ARVIN AREA-OTHERS	U	1		1						
COMPANY TOTAL		7	6	13	27	787				
WILSON OIL COMPANY										
HUNTINGTON BEACH-HUNTINGTON AVE-MAIN	S		2	2	174	5,218		2,735		
HUNTINGTON AVE-OTHERS	U		1	1	22	668				
COMPANY TOTAL			3	3	196	5,886		2,735		
WILSON-PETERSON, OPERATIONS										
HUNTINGTON BEACH-HUNTINGTON AVE-JONES	S		5	5	86	2,574	1,779*	1,073	3	
HUNTINGTON AVE-MAIN	S		1	1	74	2,233		3,527		
COMPANY TOTAL			6	6	160	4,807	1,779*	4,600	3	
WINDES WELL SERVICE										
BELRIDGE SOUTH	U		2	2	5	150				

COMPANY FIELD, AREA OR POOL	CLASS	NUMBER OF WELLS: SHUT IN	PRODUCING	TOTAL	CRUDE PRODUCTION: BARRELS DAILY	BARRELS	EXCESS OR SHORTAGE BARRELS	GAS PRODUCTION M.C.F	NO. WELLS COMP. ABD.
W. K. COMPANY									
HUNTINGTON BEACH-SOUTH OFF-SHORE-MAIN	U		1	1	22	649		1,939	
W. M. & M. OIL COMPANY									
COALINGA-WESTSIDE AREA-TEMBLOR	U		31	31	249	7,469		100	
WOOD-CALLAHAN									
EDISON-WEST AREA	U		22	22	243	7,298			
MOUNTAIN VIEW-ARVIN AREA-OTHERS	U		1	1	7	197			
MAIN AREA-OTHERS	U	1	3	4	57	1,715			
LONG BEACH-OLD AREA-UPPER POOLS	U		1	1	9	280		390	
TORRANCE-MAIN	U	1	19	20	144	4,316		1,281	
COMPANY TOTAL		2	46	48	460	13,806		1,671	
WOOD-CALLAHAN OIL COMPANY, LTD., OPERATOR									
MIDWAY-SUNSET-MIDWAY EAST-SHALLOW	U		14	14	249	7,463		1,886	
WOOD, J. W., & CALLAHAN, LESTER, TRUST									
TORRANCE-MAIN	U		3	3	20	597		365	
WOODWARD, T. F.									
SANTA MARIA VALLEY-MAIN	U	2		2					
WOODWARD, W. T.									
FRUITVALE-MARTIN-KERNCO	U		1	1	19	577			
CYMRIC-WELPORT AREA-SHALLOW	U		1	1	8	235			
MIDWAY-SUNSET-MIDWAY EAST-SHALLOW	U	1	6	7	50	1,502			
COMPANY TOTAL		1	8	9	77	2,314			
WOOLNER OIL CORPORATION, LTD.									
HUNTINGTON BEACH-NORTH AREA-ASHTON	U	1	3	4	18	553		467	
SOUTH ON-SHORE-TAR	U	1	2	3	19	564		200	
LONG BEACH-OLD AREA-UPPER POOLS	U	4	7	11	65	1,949		1,160	
TORRANCE-MAIN	U	2	1	3	13	405		174	
DEL AMO	U	4	2	6	4	122		98	
COMPANY TOTAL		12	15	27	119	3,593		2,099	
WOSK, L. DAVID, OPERATOR									
FRUITVALE-MARTIN-KERNCO	U		2	2	28	831			
W. R. OIL CO.									
HUNTINGTON BEACH-NORTH AREA-TAR BOLSA	U		1	1	8	240			
W. T. & M. OIL COMPANY									
MIDWAY SUNSET-MIDWAY WEST-UPPER	U		6	6	48	1,450		300	
YAEGER, A. T.									
MOUNT POSO GROUP-BAKER-VEDDER	U		2	2	10	300			
Y. M. K. OIL COMPANY									
KERN RIVER	U		11	11	84	2,508			

COMPANY FIELD, AREA OR POOL	CLASS	NUMBER OF WELLS: SHUT IN	PRODUCING	TOTAL	CRUDE PRODUCTION: BARRELS DAILY	BARRELS	EXCESS OR SHORTAGE BARRELS	GAS PRODUCTION M.C.F	NO. WELLS: COMP.	ABD.
YORK, VICTOR H., JR.										
PLACERITA-JUANITA AREA	U		1	1	1	38				
YOUNG BROS.										
BELRIDGE SOUTH	U	5		5						
YUNKER, C. F., DOUGAN, L. C., & ASSOC.										
LONG BEACH-OLD AREA-UPPER POOLS	U		1	1	8	226		194		
YUNKER, CHESTER F.										
LONG BEACH-OLD AREA-UPPER POOLS	U		13	13	449	13,481		6,972		
YUNKER, CROMWELL, & ASSOCIATES										
LONG BEACH-OLD AREA-UPPER POOLS	U		1	1	14	423		241		
YUNKER, MORTON, & DOLLEY										
LONG BEACH-OLD AREA-UPPER POOLS	U	2	5	7	40	1,199		1,488		
WILMINGTON-TOWN LOT-TAR-RANGER-TERMINAL	U		11	11	117	3,512		4,467		
COMPANY TOTAL		2	16	18	157	4,711		5,955		
ZENITH OIL COMPANY										
TORRANCE-MAIN	U		3	3	34	1,012				
ZEPHYR OIL COMPANY										
LONG BEACH-OLD AREA-UPPER POOLS	U		1	1	4	125		224		
WILMINGTON-TOWN LOT-TAR-RANGER-TERMINAL	U		13	13	172	5,160		846		
TOWN LOT-FORD	U		1	1	6	182		182		
COMPANY TOTAL			15	15	182	5,467		1,252		
ZIDELL, WM. I.										
RICHFIELD-EAST AREA	U	1		1						
ZIMMERMAN, J. KARL, ET AL.										
PLACERITA-OLD AREA	U		2	2	14	417		100		
ZIMMERMAN, W. C., & MCKEOWN, R. H.										
EDISON-PORTALS-FAIRFAX AREA-WICKER	U		1	1	4	135				
ZISMAN, L. H.										
EDISON-WEST AREA	U		1	1	8	250				
MOUNTAIN VIEW-ARVIN AREA-OTHERS	U		2	2	32	951				
COMPANY TOTAL			3	3	40	1,201				
MISCELLANEOUS COMPANIES										
BUENA VISTA-BUENA VISTA HILLS-OTHERS	U	5		5						
GUIJARRAL HILLS-LEDA	S	2		2						
FRESNO GROUP-CAMDEN	U	2		2						
FRUITVALE-MARTIN-KERNCO	U	2		2						
KERN RIVER	U	3		3						
MIDWAY-SUNSET-MIDWAY EAST-SHALLOW	U	2		2						
MIDWAY WEST-UPPER	U	7		7						

COMPANY FIELD, AREA OR POOL	CLASS	NUMBER OF WELLS			CRUDE PRODUCTION		EXCESS OR SHORTAGE BARRELS	GAS PRODUCTION M.C.F	NO. WELLS
		SHUT IN	PRODUCING	TOTAL	BARRELS DAILY	BARRELS			COMP ABD.
MOUNTAIN VIEW-ARVIN AREA-OTHERS	U	1		1					
MAIN AREA-OTHERS	U	2		2					
POSO CREEK GROUP-MCVAN	U	1		1					
DEVILS DEN-MAIN	U	68		68					
OTHER FIELDS-CHICO-MARTINEZ	U	2		2					
DEER CREEK	U	1		1					
KREYENHAGEN	U	3		3					
BARDSDALE-SESPE	U	6		6					
CONEJO	U	1		1					
NEWHALL GROUP-ELSMERE	U	7		7					
TUNNEL	U	2		2					
WHITNEY CANYON	U	2		2					
OJAI GROUP-SULPHUR MOUNTAIN	U	1		1					
OXNARD-MIOCENE	U	1		1					
PIRU GROUP-EUREKA	U	1		1					
HOPPER CANYON	U	1		1					
PLACERITA-JUANITA AREA	U	6		6					
RAMONA-BLACK	U	1		1					
SANTA PAULA GRP-TIMBER CANYON-MAIN	U	1		1					
WEST MOUNTAIN-SESPE	U	2		2					
CAT CANYON EAST-SISQUOC-MONTEREY	U	3		3					
CAT CANYON WEST-PLIOCENE	U	6		6					
COYOTE EAST-HUALDE	U	1		1					
HUNTINGTON BEACH-NORTH AREA-TAR BOLSA	U	1		1					
NORTH AREA-ASHTON	U	7		7					
SOUTH ON-SHORE-TAR	U	13		13					
SOUTH ON-SHORE-MAIN	U	1		1					
SOUTH OFF-SHORE-MAIN	U	1		1					
LONG BEACH-OLD AREA-UPPER POOLS	U	10		10					
NEWPORT-MESA AREA-CAGNEY	U	4		4					
ALDRICH AREA-C	U	1		1					
RICHFIELD-EAST AREA	U	2		2					
ROSECRANS-SOUTH AREA-O DEA	U	2		2					
TORRANCE MAIN	U	5		5					
DEL AMO	U	3		3					
WHITTIER-CENTRAL AREA-MAIN	U	2		2					
YORBA LINDA-SMITH	U	2		2					
OTHER FIELDS-CHINO-MAHALA	U	1		1					
LOS ANGELES	U		80	80	117	3,500			
COMPANY TOTAL		198	80	278	117	3,500			

COMPANY FIELD, AREA OR POOL	CLASS	NUMBER OF WELLS: SHUT IN	PRODUCING	TOTAL	CRUDE PRODUCTION: BARRELS DAILY	BARRELS	EXCESS OR SHORTAGE BARRELS	GAS PRODUCTION M.C.F	NO. WELLS COMP	NO. WELLS ABD
NON-COMMERCIAL & WASTE WATER PLANTS										
COALINGA-WESTSIDE AREA-TEMBLOR	U				145	4,345				
FRUITVALE-MARTIN-KERNCO	U				3*	83*				
KERN RIVER	U				218	6,536				
LONG BEACH-OLD AREA-UPPER POOLS	U				113	3,396				
COMPANY TOTAL					473	14,194				
BELRIDGE 64 UNIT										
BELRIDGE OIL COMPANY, OPERATOR										
BELRIDGE NORTH-BELRIDGE 64	S	58	26	84	797	23,900		1392,200		
BINKLEY UNIT										
UNION OIL COMPANY, OPERATOR										
COALINGA EAST EXTENSION-NOSE-EOCENE	S	2	6	8	858	25,744	1,984	30,091		
BUENA VISTA-ANTELOPE SHALE ZONE UNIT										
HONOLULU OIL CORP., OPERATOR										
BUENA VISTA-BVH-ANTELOPE SHALE-E. DOME	S		30	30	3,427	102,817	4,964*	127,746	3	
BUENA VISTA - 27-B UNIT										
STANDARD OIL COMPANY, OPERATOR										
BUENA VISTA-BUENA VISTA HILLS-27 B	S	98	97	195	7,125	213,750	13,200*	960,288		
COALINGA NORTHEAST UNIT										
STANDARD OIL COMPANY, OPERATOR										
COALINGA EAST EXTENSION-N E AREA-EOCENE	U	29	27	56	580	17,401		258,881		
COALINGA NOSE UNIT										
LOS NIETOS COMPANY, OPERATOR										
COALINGA EAST EXTENSION-NOSE-EOCENE	S	48	106	154	44,092	1322,773	317*	693,684		
COALINGA NOSE - VAQUEROS UNIT										
LOS NIETOS COMPANY, OPERATOR										
COALINGA EAST EXTENSION-NOSE-VAQUEROS	U	1	2	3	29	878		565		
COLES LEVEE SOUTH UNIT										
THE OHIO OIL COMPANY, OPERATOR										
COLES LEVEE SOUTH-STEVENS F-1 CRUDE OIL	S	2	32	34	1,804	54,109	1,391*	310,675		
STEVENS F-2 CRUDE OIL	S	1	10	11	872	26,170	1,706	132,745		
COMPANY TOTAL		3	42	45	2,676	80,279	315	443,420		
COVERT UNIT										
UNION OIL COMPANY, OPERATOR										
COALINGA EAST EXTENSION-NOSE-EOCENE	S		2	2	46	1,394	44	11,370		
CYMRIC UNIT #1										
SUPERIOR OIL COMPANY, OPERATOR										
CYMRIC-WELPORT AREA-POINT OF ROCKS IV	S		3	3	295	8,845	1,695*	3,966		
GREELEY UNIT										
STANDARD OIL COMPANY, OPERATOR										
GREELEY-RIO BRAVO	S	25	60	85	11,353	340,579	29,171*	532,870		

COMPANY FIELD, AREA OR POOL	CLASS	NUMBER OF WELLS: SHUT IN	PRODUCING	TOTAL	CRUDE PRODUCTION: BARRELS DAILY	BARRELS	EXCESS OR SHORTAGE BARRELS	GAS PRODUCTION M.C.F	NO. WELLS COMP ABD.
HELM UNIT									
AMERADA PETROLEUM CORP., OPERATOR									
FRESNO GROUP-HELM-MAIN AREA-EOCENE	S	17	21	38	307	9,225		215,180	
KETTLEMAN MIDDLE DOME CORPORATION									
STANDARD OIL COMPANY, OPERATOR									
KETTLEMAN MIDDLE DOME-EOCENE	U	1	2	3	67	1,998		23,573	
KETTLEMAN NORTH DOME UNIT									
STANDARD OIL COMPANY, OPERATOR									
KETTLEMAN NORTH DOME-TEMBLOR	S	124	218	342	11,409	342,261		3104,708	
VAQUEROS	S	27	34	61	1,595	47,839	1,138	125,409	
EOCENE	U	19	23	42	1,647	49,417		1785,931	
COMPANY TOTAL		170	275	445	14,651	439,517	1,138	5016,048	
NIDEVER UNIT									
UNION OIL COMPANY, OPERATOR									
COALINGA EAST EXTENSION-NOSE-EOCENE	S	1	2	3	59	1,761	39*	8,423	
PALOMA UNIT									
WESTERN GULF OIL COMPANY, OPERATOR									
PALOMA-MAIN AREA-PALOMA CRUDE OIL	S	2	14	16	1,432	42,970	20,405	261,330	
RIO BRAVO UNIT									
THE SUPERIOR OIL COMPANY, OPERATOR									
RIO BRAVO-RIO BRAVO-VEDDER	S	26	80	106	11,421	342,640	17,360*	699,067	
RUSSELL RANCH UNIT									
RICHFIELD OIL CORPORATION, OPERATOR									
RUSSELL RANCH-MAIN AREA-DIBBLEE	S	17	97	114	8,139	244,169	9,331*	776,981	
SALT CREEK UNIT									
INTEX OIL COMPANY, OPERATOR									
CYMRIC-SALT CREEK MAIN AREA-CARNEROS	S	19	41	60	2,926	87,770	11,230*	46,910	
SOUTH CUYAMA UNIT									
RICHFIELD OIL CORPORATION, OPERATOR									
CUYAMA SOUTH-MAIN AREA-HOMAN	S	26	190	216	31,609	948,265	12,085	937,322	
UNIT OPERATION NAVAL PETROLEUM RESERVE									
STANDARD OIL COMPANY, OPERATOR									
BUENA VISTA-BUENA VISTA FRONT	U		16	16	358	10,748		3,275	
COLES LEVEE N-NORTHWEST AREA-STEVENS	U	1	1	2	24	735		540	
ELK HILLS-MAIN AREA UPPER	U	460	327	787	18,968	569,047		183,249	
31-S AREA-26-R	S	28		28					
31-S AREA-N	U	1		1					
31-S AREA-A	S	37		37					
31-S AREA-B	S	82		82					
31-S AREA-D	S	23		23					

65499 O—55——23

COMPANY	FIELD, AREA OR POOL	CLASS	NUMBER OF WELLS: SHUT IN	NUMBER OF WELLS: PRODUCING	NUMBER OF WELLS: TOTAL	CRUDE PRODUCTION: BARRELS DAILY	CRUDE PRODUCTION: BARRELS	EXCESS OR SHORTAGE BARRELS	GAS PRODUCTION M.C.F	NO. WELLS: COMP	NO. WELLS: ABD.
	29-R AREA-A	S	8		8						
	29R-AREA-B	S	21		21						
	29R AREA-D	S	11		11						
	29-R AREA-CARNEROS	S	2		2						
	24-Z AREA-24-Z	S	11		11						
	24-Z AREA-CARNEROS	S	1		1						
	COMPANY TOTAL		686	344	1,030	19,350	580,530		187,064		
WILMINGTON-FAULT BLOCK II-TERM. UNIT											
	WILMINGTON-TERMINAL-FB-IIA-TERMINAL U&L	S	4	92	96	8,376	251,274	455	204,613		
S T A T E T O T A L			6,823	33,314	40,137	973,044	29,191,331	922,264	46,668,686	199	37

ø Includes retroactive correction for March amounting to -1,439 barrels.

CALIFORNIA OIL FIELD AND POOL
OIL AND GAS PRODUCTION

Conservation Committee of
California Oil Producers
June 28, 1955

CALIFORNIA OIL FIELD AND POOL
OIL AND GAS PRODUCTION
APRIL 1955

		OIL PROD. TOTAL BARRELS	OIL PROD. BARRELS DAILY	EXCESS or SHORTAGE B/D	WATER PRODUCTION TOTAL BARRELS	WATER PRODUCTION WATER CUT %	GAS PRODUCTION TOTAL MCF	GAS PRODUCTION MCF DAILY	GAS-OIL RATIO	TOTAL NO. PROD. WELLS	NO WELLS ON FULL TIME	OIL RATE B/D WELL	NO NEW WELL COMP.
SAN JOAQUIN VALLEY REGION													
ANT HILL		9,327	311		55,279	85.6	392	13		29			
OLCESE	U	8,444	281		47,993	85.0				24	23.1	12.2	
JEWETT	U	883	29		7,286	89.2	392	13	444	5	5.0	5.8	
ANTELOPE HILLS		32,172	1,072		169,877	84.1	28,343	945		38			
EAST BLOCK	S	9,349	312	21	86,292	90.2	3,732	124	399	7	7.0	44.6	
WEST BLOCK	S	19,767	659	21	83,536	80.9	24,611	820	1,245	24	18.5	35.6	
PHACOIDES	U	241	8		3	1.2				2	1.5	5.3	
EOCENE	U	2,815	94		46	1.6				5	4.8	19.6	
ANTELOPE HILLS NORTH	U	22,382	746		88,769	79.9	2,244	75	100	22	20.4	36.6	
BELLEVUE-STEVENS	S	19,278	643		39,846	67.4	17,658	589	916	13	12.4	51.9	
BELRIDGE NORTH		45,470	1,516		63,169	58.1	2,057,202	68,573		66			
SHALLOW	U	4,189	140		10,244	71.0	100	3	24	19	17.8	7.9	
TEMBLOR	S	5,800	193		4,700	44.8	102,300	3,410	17,638	5	4.7	41.1	
R SAND	S	3,577	119		1,013	22.1	408,208	13,607	114,120	12	11.9	10.0	
BELRIDGE 64	S	23,900	797		40,000	62.6	1,392,200	46,406	58,251	28	25.1	31.8	
Y SAND	S	8,004	267	57	7,212	47.4	154,394	5,146	19,290	4	4.0	66.8	
BELRIDGE SOUTH	U	299,126	9,971		335,199	52.8	53,214	1,774	178	1004	967.3	10.3	11
BUENA VISTA		645,718	21,524		788,124	55.0	1,503,141	50,104		1010			
BUENA VISTA FRONT AREA	U	88,101	2,937		174,212	66.4	26,427	881	300	194	190.4	15.4	
BUENA VISTA HILLS AREA		557,617	18,587		613,912	52.4	1,476,714	49,223		816			
27-B	S	213,750	7,125	440*	233,219	52.2	960,288	32,009	4,493	97	94.3	75.6	
ANTELOPE SHALE-EAST DOME	S	112,566	3,752	204*	28,563	20.2	137,152	4,572	1,218	35	33.8	111.0	3
ANTELOPE-WEST DOME	S	45,231	1,508	51*	19,878	30.5	33,324	1,111	737	15	14.3	105.5	1
OTHERS	U	186,070	6,202		332,252	64.1	345,950	11,532	1,859	669	654.5	9.5	
CANAL-STEVENS	S	31,809	1,060	20*	13,525	29.8	187,901	6,263	5,907	29	26.4	40.2	
CANFIELD GROUP		37,093	1,236		106,776	74.2	59,265	1,975		29			
CANFIELD RANCH-STEVENS	U	535	18				393	13	735	1	1.0	18.0	
GOSFORD EAST-STEVENS	S	34,502	1,150	40	101,848	74.7	56,929	1,898	1,650	24	23.7	48.5	
GOSFORD WEST-STEVENS	U	460	15		3,372	88.0	224	7	487	1	.9	16.7	
OLD RIVER-51-36	U	1,596	53		1,556	49.4	1,719	57	1,077	3	3.0	17.7	
COALINGA GROUP		2,367,408	78,913		2,492,788	51.3	1,702,196	56,739		1974			
COALINGA		537,573	17,919		992,560	64.9	58,367	1,946		1608			
EASTSIDE AREA-TEMBLOR	U	344,022	11,467		310,377	47.4	40,236	1,341	117	765	752.5	15.2	5
WESTSIDE AREA-TEMBLOR	U	193,551	6,452		682,183	77.9	18,131	604	94	843	790.7	8.2	
COALINGA EAST EXTENSION		1,369,951	45,665		1,293,745	48.6	1,003,014	33,433		145			
NORTHEAST AREA-EOCENE	U	17,401	580		691,790	97.5	258,881	8,629	14,877	27	25.0	23.2	
NOSE AREA-VAQUEROS	U	878	29		4,977	85.0	565	19	644	2	1.5	19.3	
NOSE AREA-EOCENE	S	1,351,672	45,055	55	596,978	30.6	743,568	24,785	550	116	109.1	413.0	
GUIJARRAL HILLS		367,172	12,239		59,262	13.9	545,345	18,178		92			
ALLISON	U	7,855	262		36,921	82.5	20,137	671	2,564	14	13.8	19.0	
LEDA	S	60,896	2,030	586	19,121	23.9	155,872	5,196	2,560	35	33.8	60.1	
LEDA NORTH	S	217,873	7,262	424	2,320	1.1	309,185	10,306	1,419	38	36.2	200.6	3
BOURDIEU	S	77,671	2,589	1589	897	1.1	58,646	1,955	755	4	2.0	294.5	3

CALIFORNIA OIL FIELD AND POOL
OIL AND GAS PRODUCTION
APRIL 1955

Page 2

Conservation Committee of California Oil Producers

		OIL PROD. TOTAL BARRELS	OIL PROD. BARRELS DAILY	EXCESS or SHORTAGE B/D	WATER PRODUCTION TOTAL BARRELS	WATER PRODUCTION WATER CUT%	GAS PRODUCTION TOTAL MCF	GAS PRODUCTION MCF DAILY	GAS-OIL RATIO	TOTAL NO PROD WELLS	NO WELLS ON FULL TIME	OIL RATE B/D WELL	NO NEW WELL COMP
SMITH	S	2,877	96	- 71	3	.1	1,505	50	523	1	.2	480.0	
GUIJARRAL HILLS WEST													
LEDA	S	12,258	409	261*	10,132	45.3	4,826	161	394	3	2.8	146.1	
JACALITOS-TEMBLOR	C	45,774	1,526		51,638	53.0	73,115	2,437	1,597	106	104.3	14.6	
OIL CITY-CRETACEOUS	C	1,035	34		127	10.9	240	8	232	1	1.0	34.0	
PLEASANT VALLEY-EOCENE	S	33,645	1,121	59	85,324	71.7	17,287	576	514	19	18.8	59.6	
COLES LEVEE NORTH		482,469	16,082		22,308	4.4	3,177,183	105,905		146			
NORTHWEST AREA													
STEVENS	C	1,519	51		30	1.9	1,440	48	948	2	2.0	25.5	
RICHFIELD WESTERN AREA		480,950	16,032		22,278	4.4	3,175,743	105,857		144			
21-1	S	50,734	1,691	109*	4,415	8.0	364,070	12,136	7,176	25	24.3	69.6	
WESTERN 29	S	31,844	1,061	6	1,819	5.4	203,922	6,797	6,404	21	20.7	51.3	
MAIN WESTERN	S	396,061	13,202	298*	15,889	3.9	2,605,065	86,835	6,577	96	92.8	142.3	
68-29	C	1,840	61		55	2.9	1,904	63	1,035	1	1.0	61.0	
67-29	C	471	16		100	17.5	782	26	1,660	1	1.0	16.0	
COLES LEVEE SOUTH** SEE NOTE		81,015	2,700		5,366	6.2	443,788	14,793		43			
STEVENS F-1 CRUDE OIL	S	54,109	1,804	46*	3,191	5.6	310,675	10,356	5,742	32	26.8	67.3	
STEVENS F-2 CRUDE OIL	S	26,906	897	57	2,175	7.5	133,113	4,437	4,947	11	10.9	82.3	
CUYAMA GROUP		1,348,057	44,935		565,243	29.5	1,784,363	59,478		414			
CUYAMA CENTRAL	C	457	15		1,171	71.9	274	9	600	1	1.0	15.0	
CUYAMA SOUTH		1,042,839	34,761		169,970	14.0	967,709	32,257		224			
MAIN AREA		1,042,488	34,749		159,081	13.2	967,682	32,256		223			
52-1	S	1,628	54	26*			600	20	369	1	1.0	54.0	
JOHNSTON	C												
HOMAN	S	1,017,881	33,929	429	137,755	11.9	960,234	32,007	943	207	207.0	163.9	
HIBBERD	C	22,979	766		21,326	48.1	6,848	228	298	15	14.6	52.5	
SOUTHEAST AREA-COX	C	351	12		10,889	96.9	27	1	77	1	1.0	12.0	
MORALES CANYON		11,668	389		10,647	47.7	8,588	286		25			
CLAYTON	C	5,411	180		1,218	18.4	2,339	78	432	18	16.7	10.8	
GOVERNMENT 18	C	6,257	209		9,429	60.1	6,249	208	999	7	6.6	31.7	
RUSSELL RANCH		289,385	9,646		379,201	56.7	806,792	26,893		161			
MAIN AREA		287,093	9,570		366,927	56.1	804,955	26,832		151			
138-5	C	361	12		83	18.7	8		22	1	1.0	12.0	
SLOAN	C	9,492	316		9,315	49.5	4,738	158	499	12	11.0	28.7	
DIBBLEE	S	244,169	8,139	311*	227,803	48.3	776,981	25,899	3,182	97	96.2	84.6	
RUSSELL 15-9	C	6,393	213		13,436	67.8	5,731	191	896	10	10.0	21.3	
COLGROVE NORTH	C	13,257	442		29,912	69.3	11,775	392	888	12	11.9	37.1	
COLGROVE SOUTH	C	13,421	447		86,378	86.6	5,722	191	426	19	18.8	23.8	
NORRIS AREA		2,292	76		12,274	84.3	1,837	61		10			
NORRIS	C	162	5		11,129	98.6	88	3	543	2	1.6	3.1	
GRIGGS-DIBBLEE	C	2,130	71		1,145	35.0	1,749	58	821	8	7.9	9.0	
WEST AREA													
TAYLOR CANYON	C	3,708	124		4,254	53.4	1,000	33	270	3	3.0	41.3	
EDISON		417,740	13,925		1,220,912	74.5	441,657	14,722		675			

CALIFORNIA OIL FIELD AND POOL
OIL AND GAS PRODUCTION

Page 3

EDISON		417,740	13,925		1,220,912	74.5	441,657	14,722		675				

Conservation Committee of California Oil Producers

CALIFORNIA OIL FIELD AND POOL
OIL AND GAS PRODUCTION
APRIL 1955

Page 3

		OIL PROD. TOTAL BARRELS	OIL PROD. BARRELS DAILY	EXCESS or SHORTAGE B/D	WATER PRODUCTION TOTAL BARRELS	WATER PRODUCTION WATER CUT %	GAS PRODUCTION TOTAL MCF	GAS PRODUCTION MCF DAILY	GAS-OIL RATIO	TOTAL NO PROD. WELLS	NO WELLS ON FULL TIME	OIL RATE B/D WELL	NO. NEW WELL COMP
MAIN AREA		177,371	5,912		697,657	79.7	75,939	2,531		229			
UPPER	U	38,494	1,283		97,918	71.8	8,282	276	215	107	106.0	12.1	
FRACTURED SCHIST	U	138,877	4,629		599,739	81.2	67,657	2,255	487	122	118.0	39.2	
PORTALS-FAIRFAX AREA													
WICKER	U	14,376	479		3,136	17.9	1,980	66	138	52	50.2	9.5	
WEST AREA	U	93,013	3,100		74,998	44.6	14,862	495	160	240	234.2	13.2	
EDISON GROVES AREA		11,448	382		110,158	90.6	613	20		31			
D-L-K	U	6,638	221		18,393	73.5				22	20.4	10.8	3
SHIELDS-ARMS	U	4,810	160		91,765	95.0	613	20	127	9	8.8	18.2	
RACE TRACK HILL AREA		85,953	2,865		320,667	78.9	246,096	8,203		103			
PORTALS-BERRY & CHANAC	U	1,839	61		8,312	81.9	131	4	71	11	10.8	5.6	
JEWETT	S	12,027	401		32,540	73.0	53,357	1,779	4,436	25	23.5	17.1	
PYRAMID HILL	S	53,491	1,783	155	191,037	78.1	140,948	4,698	2,635	52	51.3	34.8	
VEDDER	S	18,596	620	62	88,778	82.7	51,660	1,722	2,778	15	14.4	43.1	
JEPPI AREA	U	35,579	1,186		14,296	28.7	102,167	3,406	2,872	20	17.5	67.8	3
ELK HILLS		569,047	18,968		814,346	58.9	183,249	6,108		327			
MAIN AREA-UPPER	U	569,047	18,968		814,346	58.9	183,249	6,108	322	327	257.7	73.6	
31-S AREA-26-R	S												
31-S AREA-N	U												
31-S AREA-A	S												
31-S AREA-B	S												
31-S AREA-D	S												
29-R AREA-A	S												
29-R AREA-B	S												
29-R AREA-D	S												
29-R AREA-CARNEROS	S												
24-Z AREA-24-Z	S												
24-Z AREA-A	S												
FRESNO GROUP		301,667	10,055		1,853,790	86.0	439,406	14,647		239			
BURREL													
MIOCENE	U	6,127	204		142,554	95.9	25,278	843	4,126	7	6.2	32.9	
CAMDEN	U	1,634	54		103	5.9	1,515	50	927	4	4.0	13.5	
HELM		91,526	3,051		466,595	83.6	302,134	10,071		73			
LANARE AREA		47,115	1,570		292,579	86.1	44,921	1,497		25			
MIOCENE	U	42,231	1,408		286,051	87.1	40,005	1,333	947	21	18.9	74.5	
EOCENE	U	4,884	163		6,528	57.2	4,916	164	1,007	4	3.9	41.8	
MAIN AREA		44,411	1,480		174,016	79.7	257,213	8,574		48			
MIOCENE	S	29,462	982	732	115,131	79.6	13,971	466	474	15	13.3	73.8	
EOCENE	S	14,949	498		58,885	79.8	243,242	8,108	16,271	33	32.1	15.5	
RAISIN CITY		155,230	5,174		1,069,125	87.3	53,550	1,785		106			
TAR-MIOCENE	U	33,458	1,115		135,130	80.2	8,986	300	269	20	18.3	60.9	
MIOCENE	U	104,926	3,497		685,333	86.7	31,871	1,062	304	73	67.0	52.2	
EOCENE	U	16,846	562		248,662	93.7	12,693	423	753	13	10.8	52.0	
RIVERDALE		44,549	1,485		166,631	78.9	56,929	1,898		42			

Conservation Committee of California Oil Producers

CALIFORNIA OIL FIELD AND POOL OIL AND GAS PRODUCTION

APRIL 1955

Page 4

		OIL PROD. TOTAL BARRELS	OIL PROD. BARRELS DAILY	EXCESS or SHORTAGE B/D	WATER PRODUCTION TOTAL BARRELS	WATER PRODUCTION WATER CUT %	GAS PRODUCTION TOTAL MCF	GAS PRODUCTION MCF DAILY	GAS-OIL RATIO	TOTAL NO PROD. WELLS	NO WELLS ON FULL TIME	OIL RATE B/D WELL	NO NEW WELL COMP.
MIOCENE	S	35,309	1,177	14	155,305	81.5	48,005	1,600	1,360	29	25.4	46.3	
EOCENE	S	9,240	308		11,326	55.1	8,924	297	966	13	12.8	24.1	
SAN JOAQUIN EOCENE	U	2,601	87		8,782	77.2				7	5.9	14.7	
FRUITVALE	U	292,635	9,754		495,102	62.9	145,656	4,855	498	365	348.7	28.0	3
MARTIN-KERNCO	U	357,596	11,920		246,019	40.8	550,847	18,361		75			
GREELEY		10,916	364		84,903	88.6	11,407	380	1,045	12	11.9	30.6	
STEVENS	U	786	26		363	31.6	431	14	548	1	1.0	26.0	
12-21	U	345,894	11,530	970*	160,753	31.7	539,009	17,967	1,558	62	59.7	193.1	
RIO BRAVO-VEDDER	S	308	10		1,690	84.6				2			
GREENACRES		308	10		1,690	84.6				2	1.9	5.3	
BILLINGTON	U												
PLANK	U	35,677	1,189		244,596	87.3				128	127.2	9.3	
KERN BLUFF	U	173,469	5,782		1,162,360	87.0	11,911	397	69	677	654.7	8.8	1
KERN FRONT	U	237,717	7,924		3,876,532	94.2	222	7	1	2207	2,161.4	3.7	5
KERN RIVER													
KETTLEMAN MIDDLE DOME EOCENE	U	1,998	67		11,484	85.2	23,573	786	11,798	2	2.0	33.5	
KETTLEMAN NORTH DOME		446,728	14,891		729,302	62.0	5,309,644	176,986		282			
TEMBLOR	S	345,915	11,530		699,615	66.9	3,158,992	105,299	9,132	220	217.4	53.0	
VAQUEROS	S	50,299	1,677	38	18,056	26.4	136,053	4,535	2,705	38	37.8	44.4	
EOCENE	U	50,514	1,684		11,631	18.7	2,014,599	67,153	39,882	24	24.0	70.2	
LOS LOBOS		36,002	1,200		6,462	15.2	23,972	799		17			
18-21	U	10,135	338		1,099	9.8	2,076	69	205	9	8.9	38.0	
27-20	S	25,867	862	71	5,363	17.2	21,896	730	846	8	7.9	109.1	
LOST HILLS		150,933	5,031		703,886	82.3	162,272	5,409		656			
MAIN	U	105,676	3,522		507,143	82.8	90,810	3,027	859	531	523.0	6.7	
WILLIAMSON	U	9,669	322		125,655	92.9	13,026	434	1,347	56	52.9	6.1	
G-1	U	21,010	700		12,642	37.6	24,138	805	1,149	39	35.6	19.7	
CAHN	U	13,581	453		50,004	78.6	33,700	1,123	2,481	25	24.8	18.3	
OVERALL	U	421	14		8,342	95.2	463	15	1,100	2	1.9	7.4	
FARNSWORTH	U	576	19		100	14.8	135	4	234	3	1.9	10.0	
MCDONALD ANTICLINE		28,218	941		75,606	72.8	14,161	472		34			
BACON HILLS AREA	U												
LAYMAN AREA	U	28,218	941		75,606	72.8	14,161	472	502	34	33.5	28.1	
MCKITTRICK GROUP		684,684	22,823		1,204,875	63.8	1,069,150	35,638		794			
BELGIAN ANTICLINE		164,898	5,497		50,008	23.3	831,685	27,723		79			
NORTHWEST AREA		148,714	4,957		33,417	18.3	746,195	24,873		60			
PHACOIDES	S						317	11		2	1.0		
	S									1			
OCEANIC	S	93,083	3,103	95	26,437	22.1	212,902	7,097	2,287	30	29.5	109.2	
	S									2			
POINT OF ROCKS FIRST	S	1,218	41		239	16.4	14,973	499	12,293	4	2.6	15.8	
	U									1			
POINT OF ROCKS SECOND	S	50,004	1,667		6,163	11.0	159,005	5,300	3,180	20	20.0	83.4	
	S									2			

Conservation Committee of California Oil Producers

CALIFORNIA OIL FIELD AND POOL
OIL AND GAS PRODUCTION

APRIL 1955

Page 5

		OIL PROD. TOTAL BARRELS	OIL PROD. BARRELS DAILY	EXCESS or SHORTAGE B/D	WATER PRODUCTION TOTAL BARRELS	WATER PRODUCTION WATER CUT %	GAS PRODUCTION TOTAL MCF	GAS PRODUCTION MCF DAILY	GAS-OIL RATIO	TOTAL NO PROD. WELLS	NO WELLS ON FULL TIME	OIL RATE B/D WELL	NO NEW WELL COMP
POINT OF ROCKS THIRD	U	4,409	147		578	11.6	358,998	11,966	81,424	10	10.0	14.7	
R-K AREA													
POINT OF ROCKS THIRD	U	675	22		263	28.0	3,493	116	5,175	1	1.0	22.0	
SOUTHEAST AREA		14,964	499		13,240	46.9	75,688	2,523		17			
RANKIN	U												
PHACOIDES	S	1,919	64		4,907	71.9	7,350	245	3,830	5	5.0	12.8	
OCEANIC A	S	7,539	251	16	458	5.7	42,204	1,407	5,598	2	2.0	125.5	
OCEANIC B	U	227	8		133	36.9	13,029	434	57,396	1	1.0	8.0	
OCEANIC C	U												
POINT OF ROCKS	S	5,279	176		7,742	59.5	13,105	437	2,482	9	8.9	19.8	
TELEPHONE HILLS AREA													
OCEANIC	U	545	18		3,088	85.0	6,309	210	11,576	1	1.0	18.0	
BELGIAN ANTICLINE NORTHWST		127,599	4,253		36,586	22.3	83,297	2,777		22			
FORBES AREA													
POINT OF ROCKS THIRD	U	288	10		10	3.4	14,735	491	51,163	1	1.0	10.0	
MORIQUI AREA													
PHACOIDES	S	127,311	4,244	429	36,576	22.3	68,562	2,285	539	21	20.0	212.2	3
CYMRIC		311,382	10,379		801,011	72.0	148,758	4,959		425			
MCKITTRICK FRONT AREA		32,902	1,097		285,635	89.7	6,591	220		87			
UPPER	U	18,820	627		83,739	81.6	660	22	35	63	62.6	10.0	
LOWER	U	14,082	469		201,896	93.5	5,931	198	421	24	22.7	20.7	
WELPORT AREA		167,732	5,591		445,376	72.6	86,362	2,879		239			
SHALLOW	U	37,469	1,249		183,731	83.1	5,119	171	137	176	172.6	7.2	
FITZGERALD	U	4,158	139		43,759	91.3	10,052	335	2,418	11	10.9	12.8	
ANDERSON	U	1,604	53		12,270	88.4	2,662	89	1,660	6	6.0	8.8	
WESTON	U	733	24		3,422	82.4	665	22	907	2	2.0	12.0	
WESTON 3	U	335	11		16,473	98.0	320	11	955	1	1.0	11.0	
PHACOIDES	U	4,572	152		51,824	91.9	5,089	170	1,113	5	5.0	30.4	
OCEANIC	U	108,481	3,616		129,827	54.5	21,348	712	197	28	26.0	139.1	
WOODY	U	1,535	51		2,415	61.1	37,141	1,238	24,196	7	7.0	7.3	
POINT OF ROCKS FOURTH	S	8,845	295	56*	1,655	15.8	3,966	132	448	3	2.9	101.7	
SALT CREEK MAIN AREA													
CARNEROS	S	87,770	2,926	374*	14,123	13.9	46,910	1,564	534	41	39.9	73.3	
SALT CREEK WEST AREA		9,423	314		28,702	75.3	2,073	69		19			
SALT CREEK	U	200	7		131	39.6				4	4.0	1.8	
CARNEROS	U	4,483	149		16,627	78.8	1,983	66	442	4	3.8	39.2	
PHACOIDES	U	4,740	158		11,944	71.6	90	3	19	11	10.9	14.5	
SHEEP SPRINGS AREA		13,555	452		27,175	66.7	6,822	227		39			
54-21	U	9,653	322		4,258	30.6	2,413	80	250	29	25.4	12.7	
CARNEROS	U	1,456	49		5,343	78.6	237	8	163	4	4.0	12.3	
PHACOIDES	U	1,744	58		6,467	78.8	1,465	49	840	3	3.0	19.3	
OCEANIC	U	702	23		11,107	94.1	2,707	90	3,856	3	1.8	12.8	1
MCKITTRICK	U	77,712	2,590		274,269	77.9	5,410	180	70	246	244.1	10.6	1

Conservation Committee of California Oil Producers

CALIFORNIA OIL FIELD AND POOL
OIL AND GAS PRODUCTION
APRIL 1955

Page 6

		OIL PROD. TOTAL BARRELS	OIL PROD. BARRELS DAILY	EXCESS or SHORTAGE B/D	WATER PRODUCTION TOTAL BARRELS	WATER PRODUCTION WATER CUT%	GAS PRODUCTION TOTAL MCF	GAS PRODUCTION MCF DAILY	GAS-OIL RATIO	TOTAL NO PROD WELLS	NO WELLS ON FULL TIME#	OIL RATE B/D WELL	NO NEW WELL COMP
TEMBLOR RANCH	U	3,093	103		43,001	93.3				22	22.0	4.7	
MIDWAY-SUNSET		1,178,947	39,298		2,801,745	70.4	520,580	17,352		3286			
MIDWAY EAST AREA		400,012	13,334		723,901	64.4	280,334	9,344		1004			
SHALLOW	U	238,358	7,945		589,361	71.2	156,041	5,201	655	833	805.6	9.9	1
LAKEVIEW	U	32,036	1,068		9,771	23.4	5,683	189	177	54	53.0	20.2	
GIBSON	U	4,944	165		8,099	62.1	4,149	138	839	17	16.6	9.9	
MARICOPA FLAT	U	19,424	647		53,963	73.5	27,739	925	1,428	73	69.3	9.3	
PACIFIC	U	5,039	168		39,402	88.7	14,680	489	2,913	10	9.9	17.0	
PENTLAND	U	105	3		200	65.6	360	12	3,429	1	1.0	3.0	
MIOCENE MISCELLANEOUS	U	1,111	37		849	43.3	4,975	166	4,478	3	3.0	12.3	
PAT	S	1,985	66	9*	18	.9	1,495	50	753	1	1.0	66.0	
EXETER	S	88,646	2,955	265	22,238	20.1	62,976	2,099	710	11	10.3	286.9	1
29-D	S	8,364	279	21*			2,236	75	267	1	.9	310.0	
MIDWAY WEST AREA		712,546	23,751		1,881,323	72.5	168,356	5,612		2241			
UPPER	U	573,342	19,111		1,206,026	67.8	131,192	4,373	229	2089	1,958.9	9.8	3
QUALITY	U	26,038	868		417,823	94.1	718	24	28	62	60.2	14.4	
ETHEL D	U	19,835	661		50,241	71.7	27,955	932	1,409	20	19.9	33.2	
REPUBLIC	U	68,091	2,270		133,767	66.3	6,930	231	102	56	54.7	41.5	1
GENERAL AMERICAN	U	21,534	718		41,082	65.6				8	8.0	89.8	
SECTION 6	U	3,706	124		32,384	89.7	1,561	52	421	6	6.3	20.7	
SANTIAGO AREA		66,389	2,213		196,521	74.7	71,890	2,396		41			
SHALLOW	U	90	3		30	25.0				1	1.0	3.0	
LEUTHOLTZ	S	62,153	2,072	349	196,485	76.0	71,890	2,396	1,157	35	34.7	59.7	
METSON	U	4,146	138		6	.1				5	5.0	27.5	
MOUNT POSO GROUP		253,103	8,437		7,862,463	96.9	4,615	154		563			
BAKER-VEDDER	U	4,673	156		288,770	98.4				19	17.7	8.8	
DOMINION-VEDDER	U	8,493	283		389,895	97.9				60	58.8	4.8	
DORSEY-VEDDER	U	9,916	331		253,338	96.2				39	37.6	8.8	
GRANITE CANYON-VEDDER	U	2,532	84		20,872	89.2				18	17.7	4.7	
MOUNT POSO		213,260	7,109		6,810,879	97.0	4,615	154		398			
VEDDER	U	213,260	7,109		6,810,879	97.0	4,615	154	22	398	389.8	18.2	2
GILL	U												
SECTION 18-VEDDER	U	14,229	474		98,709	87.4				29	28.0	16.9	
MOUNTAIN VIEW		125,542	4,185		285,112	69.4	141,562	4,719		201			
ARVIN AREA		73,011	2,434		85,379	53.9	112,445	3,748		84			
M.S.J.-2	U	43,226	1,441		30,860	41.7	73,932	2,464	1,710	27	24.9	57.9	1
GEORGE	U	16,932	564		22,915	57.5	23,801	793	1,406	16	15.8	35.7	
OTHERS	U	12,853	428		31,604	71.1	14,712	490	1,145	41	36.4	11.8	
DI GIORGIO AREA	U	49	2		9	15.5	6		122	1	.3	6.7	
MAIN AREA		52,482	1,749		199,724	79.2	29,111	970		116			
WIBLE-NOZU	U	2,081	69		4,539	68.6	3,037	101	1,459	4	3.7	18.6	
OTHERS	U	50,401	1,680		195,185	79.5	26,074	869	517	112	107.8	15.6	
PALOMA** SEE NOTE		92,949	3,098		12,060	11.5	917,577	30,586		6			
MAIN AREA													
PALOMA-CRUDE OIL	S	90,983	3,033	1094	11,686	11.4	891,231	29,707	9,796	57	54.8	55.3	

CALIFORNIA OIL FIELD AND POOL

Page 7

PALOMA-CRUDE OIL	S	90,983	3,033	1094	11,686	11.4	891,231	29,707	9,796	57	54.8	55.3	

Conservation Committee of California Oil Producers

CALIFORNIA OIL FIELD AND POOL OIL AND GAS PRODUCTION

APRIL 1955

		OIL TOTAL BARRELS	PROD. BARRELS DAILY	EXCESS or SHORTAGE B/D	WATER PRODUCTION TOTAL BARRELS	WATER CUT %	GAS PRODUCTION TOTAL MCF	GAS PRODUCTION MCF DAILY	GAS-OIL RATIO	TOTAL NO. PROD WELLS	NO. WELLS ON FULL TIME	OIL RATE B/D WELL	NO. NEW WELL COMP.
SYMONS AREA		1,966	66		374	16.0	26,346	878		6			
SYMONS	U	542	18		301	35.7	23,721	791	43,766	5	5.0	3.6	
PALOMA	U	1,424	47		73	4.9	2,625	87	1,843	1	1.0	47.0	
PLEITO CREEK	U	10,643	355		945	8.2	7,011	234	659	14	13.6	26.1	
POSO CREEK GROUP		87,452	2,915		671,369	88.5	9,467	316		291			
ENAS	U	2,689	90		7,780	74.3				14	13.4	6.7	
MCVAN	U	2,018	67		13,944	87.4				17	16.9	4.0	
PREMIER-MAIN AREA	U	82,745	2,758		649,645	88.7	9,467	316	114	260	254.1	10.9	
PYRAMID HILLS-BLACKWELLS		50,973	1,699		49,589	49.3	32,022	1,067		147			
ALFERITZ		19,809	660		34,083	63.2	20,368	679		41			
UPPER	U	586	20		1,386	70.3				4	4.0	5.0	
STRODE	U	6,289	210		32,459	83.8	1,045	35	166	24	22.6	9.3	
MILLER	U	12,934	431		238	1.8	19,323	644	1,494	13	12.9	33.4	
BLACKWELLS CORNER													
TEMBLOR	U	2,474	82		4,741	65.7	340	11	137	25	25.0	3.3	
DEVILS DEN		1,830	61		32	1.7				16			
MAIN	U	220	7							12	12.0	.6	
BATES	U	1,610	54		32	1.9				4	4.0	13.5	
PYRAMID HILLS		26,446	882		9,863	27.2	11,314	377		51			
ORCHARD	U	308	10							1	1.0	10.0	
DAGANY	U	6,476	216		586	8.3	110	4	17	12	11.8	18.3	
OTHERS	U	8,074	269		8,042	49.9	1,428	48	177	34	33.3	8.1	2
ELLISON	S	4,992	166	16			5,250	175	1,052	1	1.0	166.0	
N D H	S	6,596	220	135*	1,235	15.8	4,526	151	686	3	2.3	95.7	1
WELCOME VALLEY	U	414	14		870	67.8				14	14.0	1.0	
RIO BRAVO		363,419	12,114		154,656	29.9	706,285	23,543		83			
RIO BRAVO-VEDDER	S	342,640	11,421	579*	153,142	30.9	699,067	23,302	2,040	80	72.8	156.9	
HELBLING	S	20,779	693	68	1,514	6.8	7,218	241	347	3	2.8	247.5	
ROSEDALE-STEVENS	S	34,738	1,158	318	21,275	38.0	66,433	2,214	1,912	18	16.7	69.3	
ROUND MOUNTAIN GROUP		140,084	4,669		4,538,825	97.0	4,258	142		375			
ALMA-VEDDER	U	1,235	41		29,001	95.9				10	9.7	4.2	
COFFEE CANYON-VEDDER	U	24,872	829		843,172	97.1	60	2	2	83	81.9	10.1	
PYRAMID-VEDDER	U	9,545	318		298,475	96.9				53	52.2	6.1	
ROUND MOUNTAIN		90,555	3,018		2,706,690	96.8	4,088	136		182			
JEWETT	U	9,994	333		50,712	83.5				45	44.5	7.5	
VEDDER	U	80,561	2,685		2,655,978	97.1	4,088	136	51	137	135.5	19.8	
SHARKTOOTH-VEDDER	U	13,877	463		661,487	97.9	110	4	8	47	44.3	10.5	
STRAND		6,488	216		23,267	78.2	5,195	173		12			
STEVENS UPPER	U	2,958	99		11,274	79.2	3,222	107	1,089	9	9.0	11.0	
STEVENS LOWER	U	3,530	118		11,993	77.3	1,973	66	559	3	2.9	40.7	
STRAND EAST-STEVENS	S	8,570	286	14*	294	3.3	8,620	287	1,006	7	6.6	43.3	
TEJON GROUP		296,394	9,880		415,566	58.4	159,727	5,324		398			
COMANCHE POINT	U	325	11		400	55.2				9	9.0	1.2	
TEJON FLATS	U	374	12		4	1.1	150	5	401	1	1.0	12.0	

Conservation Committee of California Oil Producers

CALIFORNIA OIL FIELD AND POOL
OIL AND GAS PRODUCTION
APRIL 1955

Page 8

		OIL PRODUCTION TOTAL BARRELS	OIL PRODUCTION BARRELS DAILY	EXCESS or SHORTAGE B/D	WATER PRODUCTION TOTAL BARRELS	WATER PRODUCTION WATER CUT %	GAS PRODUCTION TOTAL MCF	GAS PRODUCTION MCF DAILY	GAS-OIL RATIO	TOTAL NO PROD. WELLS	NO WELLS ON FULL TIME	OIL RATE B/D WELL	NO NEW WELL COMP
TEJON-GRAPEVINE		208,295	6,943		120,590	36.7	140,578	4,686		168			
CENTRAL AREA		163,538	5,451		17,067	9.4	126,968	4,232		79			
TRANSITION	S	11,039	368		1,922	14.8	3,959	132	359	9	8.2	44.9	
S-P	C	12,006	400		3,581	23.0	4,495	150	374	26	24.9	16.1	
RESERVE	C	9,005	300		3,795	29.8	1,938	65	215	11	10.1	29.7	
V	C	9,693	323		4,619	32.3	11,237	375	1,159	9	7.6	42.5	
OLCESE	S	99,856	3,329	123	3,014	2.9	87,478	2,916	876	21	19.1	174.3	1
J V	S	21,939	731	23	136	.6	17,861	595	814	3	2.2	332.3	1
EASTERN AREA	C	3,957	132		3,262	45.2	710	24	179	18	17.9	7.4	
WESTERN AREA		40,800	1,360		100,261	71.1	12,900	430		71			
S	C	40,032	1,334		97,841	71.0	12,192	406	305	69	63.6	21.0	
RESERVE	C	768	26		2,420	75.9	708	24	922	2	1.3	20.0	1
TEJON HILLS		87,400	2,913		294,572	77.1	18,999	633		220			
S	C	52,660	1,755		160,282	75.3	1,831	61	35	169	166.1	10.6	2
V	C	22,403	747		93,085	80.6	10,878	363	486	27	26.9	27.8	
T	C	12,337	411		41,205	77.0	6,290	210	510	24	23.5	17.5	1
TEN SECTION		143,354	4,778		109,522	43.3	194,734	6,491		110			
STEVENS	S	140,191	4,673	983	100,741	41.8	191,458	6,382	1,366	103	102.6	45.5	
53	C	3,163	105		8,781	73.5	3,276	109	1,036	7	7.0	15.0	
WASCO		1,923	64		31,721	94.3	11,772	392		3			
VEDDER	C	698	23		31,303	97.8	1,032	34	1,479	2	2.0	11.5	
EOCENE	C	1,225	41		418	25.4	10,740	358	8,767	1	1.0	41.0	
WHEELER RIDGE		182,644	6,088		29,940	14.1	286,882	9,563		92			
COAL OIL CANYON	C	10,656	355		3,211	23.2	2,965	99	278	23	22.4	15.8	
MAIN	C	10,391	346		7,385	41.5	7,918	264	762	33	31.0	11.2	
424-28	S	4,597	153	19	382	7.7	3,234	108	704	2	2.0	76.5	
GORDON	S	20,503	683	12*	12,867	38.6	15,825	527	772	9	8.1	84.3	
2-38	C	3,733	124		1,195	24.2	6,966	232	1,866	3	3.0	41.3	
276-29	C	2,093	70		676	24.4	15,690	523	7,496	4	3.9	17.9	
EOCENE	S	129,449	4,315	363	4,186	3.1	231,958	7,732	1,792	17	16.7	258.4	
RB2	C	1,222	41		38	3.0	2,326	78	1,903	1	1.0	41.0	
OTHER FIELDS		68,511	2,284		108,914	61.4	60,271	2,009		59			
CALDER-STEVENS	C	2,933	98		1,970	40.2	4,097	137	1,397	2	2.0	49.0	
CHENEY RANCH	C												
CHICO-MARTINEZ	C												
CIERVO	C	229	8		11	4.6				4	2.3	3.5	
DEER CREEK	C	5,429	181		34,360	86.4				11	10.5	17.2	
JASMIN	C	1,706	57		14,595	89.5				6	5.7	10.0	
KREYENHAGEN	C												
ROSEDALE RANCH	C	56,719	1,891		52,602	48.1	53,481	1,783	943	32	28.0	67.5	2
SAN EMIGDIO - MIOCENE	C												
TURK ANTICLINE	C	81	3		39	32.5	2,393	80	29,543	1	1.0	3.0	
UNION AVENUE	C	1,372	46		5,337	79.5	300	10	219	2	2.0	23.0	
VALLECITOS	C	42	1							1	.9	1.1	

CALIFORNIA OIL FIELD AND POOL
OIL AND GAS PRODUCTION

Page 9

UNION AVENUE	U	1,372	46		5,337	79.5	300	10	219	2	2.0	23.0		
VALLECITOS	U	42	1							1	.9	1.1		

Conservation Committee of California Oil Producers

CALIFORNIA OIL FIELD AND POOL
OIL AND GAS PRODUCTION
APRIL 1955

	OIL TOTAL BARRELS	OIL PROD. BARRELS DAILY	EXCESS or SHORTAGE B/D	WATER PRODUCTION TOTAL BARRELS	WATER CUT %	GAS PRODUCTION TOTAL MCF	GAS PRODUCTION MCF DAILY	GAS-OIL RATIO	TOTAL NO PROD WELLS	NO WELLS ON FULL TIME	OIL RATE B/D WELL	NO NEW WELL COMP
SAN JOAQUIN VALLEY REGION	12,201,477	406,716	4712	34,510,494	73.9	22,529,619	750,988	1,846	17019	16,369.8	24.8	66
SCHEDULED	6,528,576	217,619							2016	1,946.3	111.8	17
UNSCHEDULED	5,672,901	189,097							15003	14,423.7	13.1	49

Conservation Committee of California Oil Producers

CALIFORNIA OIL FIELD AND POOL
OIL AND GAS PRODUCTION
APRIL 1955

Page 10

		OIL PROD. TOTAL BARRELS	OIL PROD. BARRELS DAILY	EXCESS or SHORTAGE B/D	WATER PRODUCTION TOTAL BARRELS	WATER PRODUCTION WATER CUT%	GAS PRODUCTION TOTAL MCF	GAS PRODUCTION MCF DAILY	GAS-OIL RATIO	TOTAL NO PROD WELLS	NO WELLS ON FULL TIME	OIL RATE B/D WELL	NO NEW WELL COMP
COASTAL REGION													
SANTA BARBARA DISTRICT		135,154	4,505		778,038	85.2	151,341	5,045		129			
CAPITAN		25,784	859		418,131	94.2	42,225	1,407		67			
VAQUEROS	U	12,378	413		346,568	96.6	5,289	176	427	36	35.8	11.5	
ERBURU	U	1,693	56		2,366	58.3	27,066	902	15,987	13	13.0	4.3	
COVARRUBIAS	U	11,594	386		56,834	83.1	9,701	323	837	17	16.7	23.1	
COLDWATER	U	119	4		12,363	99.0	169	6	1,420	1	.6	6.7	
ELWOOD		108,624	3,621		355,072	76.6	109,116	3,637		57			
VAQUEROS	U	106,400	3,547		326,073	75.4	104,266	3,475	980	50	47.3	75.0	
SESPE	U	2,224	74		28,999	92.9	4,850	162	2,181	7	6.7	11.0	
SANTA BARBARA-VAQUEROS	U	445	15		4,825	91.6				4	4.0	3.8	
SUMMERLAND	U	301	10		10	3.2				1	1.0	10.0	
SANTA CLARA VALLEY DISTRICT		2,108,158	70,271		756,633	26.4	4,045,869	134,861		2075			
ALISO CANYON		250,605	8,353		137,536	35.4	240,580	8,019		113			
ALISO	U	27,571	919		77,153	73.7	4,653	155	169	16	16.0	57.4	
ALISO WEST	U	258	9		120	31.7	181	6	702	1	1.0	9.0	
PORTER	S	50,408	1,680	730	21,092	29.5	35,636	1,188	707	21	21.6	77.8	
DEL ALISO	S	58,976	1,966	514	17,045	22.4	53,685	1,789	910	17	16.6	118.4	
MISSION-ADRIAN	U	92	3		78	45.9	2,740	91	29,783	1	.8	3.8	
SESNON	S	106,325	3,544	35	21,151	16.6	138,239	4,608	1,300	51	42.4	85.6	
FAULTED SESNON	U	591	20		30	4.8	662	22	1,120	2	2.0	10.0	
FREW EOCENE	U	6,384	213		867	12.0	4,784	159	749	3	2.7	78.9	
BARDSDALE		31,202	1,040		18,670	37.4	153,915	5,130		93			
SESPE	U	9,075	302		6,827	42.9	28,917	964	3,186	60	53.7	5.6	
EOCENE	U	22,127	738		11,843	34.9	124,998	4,167	5,649	33	32.7	22.6	
CANOGA PARK	U	18	1		72	80.0				1	1.0	1.0	
CASCADE	S	3,597	120	80*	399	10.0	60	2	17	2	2.0	60.0	
CASTAIC HILLS		78,338	2,611		3,519	4.3	207,493	6,916		55			
STERLING	S	73,507	2,450	32	3,519	4.6	201,116	6,704	2,736	54	52.1	47.0	
RYNNE-FISHER	S	4,831	161	11			6,377	213	1,320	1	1.0	161.0	
CASTAIC JUNCTION		124,802	4,160		4,556	3.5	226,789	7,560		38			
10	S	97,063	3,235	32	2,987	3.0	55,319	1,844	570	33	31.3	103.4	1
	S									2-			
15	S	17,019	567	23*	1,569	8.4	43,866	1,462	2,577	5	4.5	126.0	
	S									1-			
21	S	10,720	357	157			127,604	4,253	11,903	4	3.4	109.0	
	S									1-			
CONEJO	U	30	1		145	82.9				6	6.0	.2	
DEL VALLE		80,173	2,672		156,969	66.2	250,473	8,349		82			
EAST AREA		48,455	1,615		82,529	63.0	178,051	5,935		37			
SHERMAN	S	4,224	141		35,429	89.3	14,958	499	3,541	6	6.0	23.5	
DEL VALLE	S	26,047	868	38	19,509	42.8	81,001	2,700	3,110	18	16.7	52.0	1
DL4-DL5	U	207	7		138	40.0	3,766	126	18,193	1	1.0	7.0	
BERING	S	8,279	276	1	22,480	73.1	28,313	944	3,420	7	7.0	39.4	

CALIFORNIA OIL FIELD AND POOL

Page 11

BERING	S	8,279	276	1	22,480	73.1	28,313	944	3,420	7	7.0	39.4		

Conservation Committee of California Oil Producers

CALIFORNIA OIL FIELD AND POOL
OIL AND GAS PRODUCTION
APRIL 1955

		OIL PROD.		EXCESS or SHORTAGE B/D	WATER PRODUCTION		GAS PRODUCTION		GAS-OIL RATIO	TOTAL NO. PROD. WELLS	NO WELLS ON FULL TIME	OIL RATE B/D PER WELL	NO NEW WELL COMP.
		TOTAL BARRELS	BARRELS DAILY		TOTAL BARRELS	WATER CUT %	TOTAL MCF	MCF DAILY					
LINCOLN	S	9,698	323	127*	4,973	33.9	50,013	1,667	5,157	3	4.7	68.7	
KIRLER AREA													
DEL VALLE	W	1,814	60		3,116	63.2	428	14	232	4	3.5	17.1	
SOUTH AREA	W	271	9		8	2.9				1	.8	11.3	
WEST AREA		29,633	988		71,816	78.6	72,002	2,400		40			
P-60 PLIOCENE	S	2,980	99	51*	21	.7	7,374	246	2,474	1	1.0	99.0	
McLaF.3-1	W	116	4		53	31.4	390	13	3,362	1	1.0	4.8	
SEPULVEDA	W	3,878	129		8,203	67.9	11,090	370	2,860	3	3.0	25.8	
VASQUEZ 13	S	5,638	188	128*	24,928	81.6	16,112	537	2,858	3	4.9	38.4	
VASQUEZ-VIDEGAIN	S	11,281	376		37,135	76.7	20,621	687	1,828	13	14.5	25.9	
VASQUEZ 14	S	5,740	191		976	14.5	16,415	547	2,860	13	12.6	15.2	
FILLMORE													
SPALDING	S	38,089	1,003	122*	1,676	4.7	41,344	1,378	1,378	3	3.0	334.3	
HONOR RANCHO		77,039	2,568		16,182	17.4	178,742	5,991		18			
RANCHO	S	18,265	609	174	285	1.5	28,914	964	1,583	6	5.2	117.1	
WAYSIDE	S	58,774	1,959	151*	15,899	21.3	150,828	5,028	2,566	12	11.1	176.5	
HORSE MEADOWS	U	532	18		402	43.0	441	15	829	1	1.0	18.0	
LAS LLAJAS-EOCENE	U	255	8		29	10.2	90	3	353	2	2.0	4.0	
MISSION		6,821	227		3,553	34.2	3,713	124		3			
S-1	W	5,791	193		3,220	35.7	1,990	65	337	1	1.0	193.0	
6-1	U	1,030	34		333	24.4	1,763	59	1,712	2	1.6	21.3	
MONTALVO WEST		51,552	1,718		5,116	9.0	78,162	2,605		19			
MCGRATH	U	10,628	354		1,426	11.8	60,879	2,029	5,728	12	11.5	30.8	
COLONIA	S	40,924	1,364	63	3,690	8.3	17,283	576	422	7	6.3	209.8	
MOORPARK	U	211	7		5	2.3	215	7	1,019	1	.5	14.0	1
NEWHALL GROUP		7,081	236		3,010	41.4	1,782	59		46			
DE WITT CANYON													
ELSMERE	W	60	2							1	1.0	2.0	
PICO CANYON	W	638	21		371	36.8	1,782	59	2,793	10	9.4	2.2	
TOWNSITE	W	335	11		352	51.2				4	2.9	3.8	
TOWSLEY CANYON	W	240	8		1,180	83.1				9	4.3	1.9	
TUNNEL	W	5,808	194		3,187	34.9				28	25.6	7.6	
WHITNEY CANYON	W												
WILEY CANYON	W												
NEWHALL-POTRERO		384,724	10,157		17,748	5.5	1,405,504	46,850		113			
1-2-3	S	99,805	3,327	53*	13,477	11.9	981,569	32,719	9,835	33	31.3	64.9	
5TH	S	75,103	2,503	3	1,539	2.0	225,191	7,506	2,998	35	35.0	71.5	
6TH	S	43,637	1,455	48*	1,149	2.6	144,932	4,831	3,321	11	10.0	145.5	1
7TH	S	85,484	2,849	351*	1,120	1.3	93,062	1,769	621	13	12.0	237.4	
9TH	W	695	23		463	40.0	758	25	1,079	1	1.0	23.0	
OAK CANYON		31,809	1,060		9,183	22.4	62,798	2,093		19			
1-A	U	993	33		2,139	68.3	1,526	51	1,537	5	4.2	7.9	
3-AB	U	5,841	195		1,990	25.0	11,162	372	1,911	2	2.0	97.5	
4-AB	S	4,347	145	8*	591	12.0	98738	325		3			
	S									1-			

Conservation Committee of California Oil Producers

CALIFORNIA OIL FIELD AND POOL
OIL AND GAS PRODUCTION
APRIL 1955

Page 12

		OIL PROD. TOTAL BARRELS	OIL PROD. BARRELS DAILY	EXCESS or SHORTAGE B/D	WATER PRODUCTION TOTAL BARRELS	WATER PRODUCTION WATER CUT%	GAS PRODUCTION TOTAL MCF	GAS PRODUCTION MCF DAILY	GAS-OIL RATIO	TOTAL NO. PROD. WELLS	NO. WELLS ON FULL TIME	OIL RATE B/D WELL	NO. NEW WELL COMP.
5-A	S	15,601	520	85	3,348	17.7	32,296	1,075	2,068	9	8.9	58.4	
	S									1-			
6-AB,7 & 8-AB	U	5,027	168		1,155	18.7	8,116	271	1,614	2	1.9	88.4	
OAKRIDGE-MIOCENE	S	73,454	2,448	343	27,126	27.0	53,262	1,775	725	40	38.1	64.3	
OAT MOUNTAIN-WIGDAL	U	1,017	34		5,450	84.3	1,500	50	1,475	1	1.0	34.0	
OJAI GROUP		7,538	251		3,834	33.7	1,691	56		76			
LION MOUNTAIN-EOCENE	U	1,150	38		468	28.9				4	4.0	4.3	
OAK VIEW	U	169	6		10	5.6				1	.7	8.4	1
SISAR-SILVERTHREAD	U	3,907	130		3,100	44.2	15		4	61	52.9	2.5	2
SULPHUR MOUNTAIN	U												
SULPHUR MOUNTAIN NORTH	U	2,295	76		228	9.0	1,674	56	729	4	2.2	34.5	
TIP-TOP	U	17	1		28	62.2	2		118	4	.8	1.3	
OXNARD		65,527	2,184		6,604	9.2	43,391	1,446		31			
MIOCENE	U	35,344	1,178		4,264	10.8	3,074	102	87	17	16.9	69.7	
MCINNIS	U	3,803	127		1,244	24.6	3,243	108	853	4	3.0	42.3	2
LIVINGSTON	S	26,380	879	363*	1,096	4.0	37,074	1,236	1,405	10	6.7	131.2	3
LUCAS	U												
PIRU GROUP		22,048	735		73,233	76.9	14,932	498		78			
EUREKA	U	66	2		980	93.7	18		152	6	4.0	.5	
HOLSER CANYON	U	2,622	87		3,597	57.8	500	17	191	6	4.0	14.5	
HOPPER CANYON	U	4,829	161		21,540	81.7	6,240	208	1,292	21	21.0	7.7	
MODELO	U	178	6							10	1.7	3.5	
TAPO CANYON	U	2,555	85		37,353	93.6				14	12.0	7.1	
TEMESCAL	U	11,798	393		9,763	45.3	8,182	273	694	21	20.9	18.8	
PLACERITA		156,370	5,212		133,158	46.0	14,257	475		328			
JUANITA AREA	U	79,876	2,663		75,282	48.5	760	25	10	136	135.2	19.7	
OLD AREA	U	76,494	2,550		57,876	43.1	13,497	450	176	192	188.9	13.5	
RAMONA		61,579	2,053		15,901	20.5	195,278	6,443		123			
BLACK	U	3,993	133		2,637	39.8	19,814	654	4,912	9	8.9	14.9	
KERN-DEL VALLE	S	57,586	1,920	48	13,264	18.7	173,464	5,789	3,016	114	111.8	17.2	
SANTA PAULA GROUP		29,003	967		7,554	20.7	30,344	1,011		56			
ADAMS CANYON	U	278	9		35	11.2	90	3	324	5	4.6	2.0	
ALISO CANYON OLD													
SALT MARSH CANYON													
SANTA PAULA CANYON	U	1,000	33		1,530	60.5	128	4	120	16	10.1	3.3	
TIMBER CANYON		27,379	913		5,976	17.9	30,044	1,001		31			
MAIN	U	26,353	878		5,944	18.4	29,060	969	1,103	30	27.9	31.5	
LOEL-MAXWELL	S	1,026	34	9	32	3.0	984	33	959	1	1.0	34.8	
WHEELER CANYON	U	346	12		13	3.6	90	3	260	4	4.0	3.0	
SESPE CANYON GROUP		5,285	176		4,024	43.2	1,115	37		33			
FOOT OF THE HILL	U	2,710	90		1,965	42.0	40	1	15	9	8.4	10.7	
LITTLE SESPE CREEK	U	811	27				55	2	68	6	6.0	4.5	
SECTIONS 23 & 26	U												

CALIFORNIA OIL FIELD AND POOL
OIL AND GAS PRODUCTION

Page 13

Conservation Committee of California Oil Producers

CALIFORNIA OIL FIELD AND POOL
OIL AND GAS PRODUCTION
APRIL 1955

Page 13

		OIL PROD. TOTAL BARRELS	OIL PROD. BARRELS DAILY	EXCESS or SHORTAGE B/D	WATER PRODUCTION TOTAL BARRELS	WATER PRODUCTION WATER CUT%	GAS PRODUCTION TOTAL MCF	GAS PRODUCTION MCF DAILY	GAS-OIL RATIO	TOTAL NO PROD WELLS	NO WELLS ON FULL TIME#	OIL RATE B/D WELL	NO NEW WELL COMP
TAR CREEK	U	1,039	35		1,245	54.5	728	24	693	11	8.8	4.0	
TOPA-TOPA	U	725	24		814	52.9	300	10	414	7	6.8	3.5	
SHIELLS CANYON		28,049	935		12,486	30.8	37,115	1,237		157			
BASOLO	U	9,357	312		3,196	25.5	4,900	163	524	12	11.3	27.6	
SESPE	U	18,692	623		9,290	33.2	32,215	1,074	1,723	145	131.3	4.7	1
SOMIS	U	176	6		146	45.3	145	5	824	1	.5	12.0	
SIMI-SESPE-EOCENE	U	4,868	162		2,146	30.6	550	18	113	67	67.0	2.4	
SOUTH MOUNTAIN-SESPE	U	394,084	13,136		35,581	8.3	613,782	20,458	1,557	354	345.0	38.1	1
TAPO CANYON SOUTH		62,543	2,085		30,744	33.0	23,591	786		22			
TERRY	S	58,517	1,951	418	28,672	32.9	20,936	698	358	17	16.4	119.0	1
SESPE	U	4,026	134		2,072	34.0	2,655	88	659	5	4.9	27.3	
TORREY CANYON		103,119	3,437		13,694	11.7	150,830	5,028		66			
UPPER SESPE	U	8,715	290		5,091	36.9	5,572	186	639	50	46.7	6.2	
LOWER SESPE	S	94,404	3,147	238*	8,603	8.4	145,258	4,842	1,539	16	15.5	203.0	
WELDON CANYON	U	3,076	103		163	5.0	1,740	58	566	2	1.5	68.7	
WEST MOUNTAIN-SESPE	U	11,544	385		4,219	26.8	11,275	376	977	25	22.0	17.5	
SANTA MARIA DISTRICT		1,247,229	41,574		2,612,607	67.7	1,314,093	43,803		1282			
BARHAM RANCH	U												
CASMALIA		50,292	1,676		145,273	74.3	17,573	586		59			
SISQUOC-MONTEREY	U	49,560	1,652		143,307	74.3	13,343	445	269	57	55.4	29.8	
ARELLANES	U	732	24		1,966	72.9	4,230	141	5,779	2	2.0	12.0	
CAT CANYON GROUP		560,189	18,673		747,663	57.1	314,112	10,470		341			
BRADLEY CANYON													
SISQUOC-MONTEREY													
CAT CANYON EAST													
SISQUOC-MONTEREY	U	5,167	172		521	9.2	472	16	91	8	7.8	22.1	
CAT CANYON WEST		456,070	15,202		614,580	57.4	284,705	9,490		279			
PLIOCENE	U	74,426	2,481		121,515	62.0	38,773	1,292	521	80	79.0	31.4	
ALEXANDER	U	34,577	1,153		70,366	67.1	16,790	560	486	25	24.8	46.5	
LOS FLORES	S	343,302	11,443	1608	422,649	55.2	228,702	7,623	666	171	166.9	68.6	1
THOMAS	U	3,765	125		50	1.3	440	15	117	3	3.0	41.7	
GATO RIDGE													
TOGNAZZINI	S	77,803	2,593	355	108,170	58.2	28,935	964	372	42	39.0	66.5	
OLIVERA CANYON	U	21,149	705		23,792	52.9				12	11.9	59.2	
TINAQUAIC	U												
FOUR DEER	U	2,624	87		14,773	84.9	10,246	342	3,905	12	11.8	7.4	
GUADALUPE													
SISQUOC-KNOXVILLE	S	68,587	2,286	19	4,809	6.6	59,519	1,984	868	41	39.3	58.2	1
JESUS MARIA	U												
LOMPOC-MONTEREY	S	100,295	3,343	657*	468,557	82.4	136,761	4,559	1,364	105	103.7	32.2	
ORCUTT	U	102,217	3,407		373,726	78.5	180,099	6,003	1,762	288	257.6	13.2	
SANTA MARIA VALLEY		247,554	8,252		716,926	74.3	556,327	18,544		416			
MAIN	U	234,888	7,830		711,295	75.2	554,797	18,493	2,362	413	380.8	20.6	
HOUK	S	12,666	422		5,631	30.8	1,530	51	121	3	2.9	145.5	

CALIFORNIA OIL FIELD AND POOL
OIL AND GAS PRODUCTION

Page 14

Conservation Committee of
California Oil Producers

APRIL 1955

		OIL PRODUCTION		EXCESS or SHORTAGE B/D	WATER PRODUCTION		GAS PRODUCTION		GAS-OIL RATIO	TOTAL NO PROD WELLS	NO WELLS ON FULL TIME#	OIL RATE B/D WELL	NO NEW WELL COMP
		TOTAL BARRELS	BARRELS DAILY		TOTAL BARRELS	WATER CUT %	TOTAL MCF	MCF DAILY					
ZACA CREEK-MONTEREY	W	115,471	3,849		140,880	55.0	39,456	1,315	342	40	40.0	96.2	
VENTURA DISTRICT		2,650,423	88,347		843,884	24.2	6,251,332	208,376		1358			
RINCON		264,916	8,830		223,186	45.7	516,313	17,210		238			
MAIN AREA		132,639	4,421		160,509	54.8	161,561	5,385		145			
HOBSON-TOMSON-HILEY	W	99,972	3,332		110,779	52.6	134,140	4,471	1,342	126	121.6	27.4	
C-9	W	32,667	1,089		49,730	60.4	27,421	914	839	19	18.6	58.5	
OAK GROVE AREA	S	48,589	1,620	239	15,093	23.7	210,033	7,001	4,323	40	39.3	41.2	
PADRE CANYON AREA		83,688	2,790		47,584	36.2	144,719	4,824		53			
OTHERS	S	76,760	2,559	60	35,012	31.3	138,078	4,603	1,799	51	50.4	50.8	
A-35	W	6,928	231		12,572	64.5	6,641	221	959	2	2.0	115.5	
SAN MIGUELITO		156,068	5,202		29,186	15.8	737,461	24,582		105			
FIRST GRUBB	S	56,554	1,885	515	18,215	24.4	273,196	9,106	4,831	46	43.6	43.2	
	S									1-			
SECOND GRUBB	S	61,640	2,055	675	5,121	7.7	357,954	11,932	5,807	36	32.8	62.7	
	S									1-			
THIRD GRUBB	W	37,874	1,262		5,850	13.4	106,311	3,544	2,807	25	21.0	60.1	
VENTURA		2,229,439	74,314		591,512	21.0	4,997,558	166,584		1015			
A-3,B-3	S	31,061	1,035	10	17,519	36.1	102,475	3,416	3,299	35	34.2	30.3	
B-1,2	W	3,857	129		6,162	61.5	14,731	491	3,819	9	9.0	14.3	
B-4,5 SOUTH	W	2,945	98		61	2.0	2,082	69	707	1	1.0	98.0	
B-4,5 WEST	S	33,527	1,118	38	4,880	12.7	232,772	7,759	6,943	22	22.0	50.8	
B-6 SOUTH	W	2,016	67		97	4.6	11,103	370	5,507	1	.9	74.4	
C BLOCK	W	260,368	8,679		116,824	31.0	517,778	17,259	1,989	257	250.3	34.7	
C-1,2 WEST	S	26,405	880	361	16,314	38.2	51,041	1,701	1,933	15	14.7	59.9	
C-3 WEST	S	38,979	1,299	94	11,903	23.4	149,117	4,971	3,826	28	27.5	47.2	
D-3	W	31,600	1,053		30,735	49.3	58,471	1,949	1,850	28	26.6	39.6	
D-4	W	7,027	234		3,311	32.0	25,015	834	3,560	10	10.0	23.4	
D-5 WEST	S	97,953	3,265	1434	17,963	15.5	783,509	26,117	7,999	74	72.2	45.2	
D-5,6 EAST	S	227,848	7,595	251	33,039	12.7	801,304	26,710	3,517	122	119.2	63.7	
D-5,6 NORTH	S	582,870	19,429	4047	77,204	11.7	986,962	32,898	1,693	139	133.4	145.6	2
D-6 WEST	S	94,937	3,165	779	16,164	14.5	367,751	12,258	3,874	51	48.7	65.0	
D-7 D-8	S	780,046	26,268	222	239,336	23.3	893,447	29,781	1,134	223	212.0	123.9	3
SAN LUIS OBISPO COUNTY DIST													
EDNA ARROYO GRANDE		3,679	123		13,166	78.2				23			
TIBER AREA	U	2,779	93		13,086	82.5				18	17.9	5.2	
OAK PARK AREA	U	900	30		80	8.2				5	3.1	9.7	
SANTA CRUZ DISTRICT													
LOMERIAS	W												
MOODY GULCH-LOS GATOS	W												
SARGENT	W												
SONOMA COUNTY DISTRICT													
PETALUMA	W	28	1		8	22.2				1	.5	2.0	
SALINAS VALLEY DISTRICT		926,613	30,887		117,843	11.3	477,013	15,900		491			
BITTERWATER	U	1,123	37		615	35.4				7	5.9	6.3	

CALIFORNIA OIL FIELD AND POOL
OIL AND GAS PRODUCTION

Page 15

Conservation Committee of
California Oil Producers

APRIL 1955

		OIL PRODUCTION		EXCESS or SHORTAGE B/D	WATER PRODUCTION		GAS PRODUCTION		GAS-OIL RATIO	TOTAL NO PROD WELLS	NO WELLS ON FULL TIME#	OIL RATE B/D WELL	NO NEW WELL COMP
		TOTAL BARRELS	BARRELS DAILY		TOTAL BARRELS	WATER CUT %	TOTAL MCF	MCF DAILY					
SANTA MARIA DISTRICT		1,302,808	43,427		1,102,000	45.8	1,302,808	43,427		1,000			
ORCUTT		1,302,808	43,427		1,102,000	45.8	1,302,808	43,427		1,000			
MAIN AREA		1,302,808	43,427		1,102,000	45.8	1,302,808	43,427		1,000			
SOUTHWEST	W	1,302,808	43,427		1,102,000	45.8	1,302,808	43,427		1,000			
SOUTH MOUNTAIN		1,302,808	43,427		1,102,000	45.8	1,302,808	43,427		1,000			
SOUTH MOUNTAIN

SALINAS VALLEY DISTRICT	U	926,613	30,887		1171845	1189	4771015	159700		7	5.9	6.3	
BITTERWATER	U	1,123	37		615	35.4							

		OIL PROD. TOTAL BARRELS	OIL PROD. BARRELS DAILY	EXCESS or SHORTAGE B/D	WATER PRODUCTION TOTAL BARRELS	WATER PRODUCTION WATER CUT %	GAS PRODUCTION TOTAL MCF	GAS PRODUCTION MCF DAILY	GAS-OIL RATIO	TOTAL NO PROD. WELLS	NO. WELLS ON FULL TIME	OIL RATE B/D WELL	NO NEW WELL COMP
SAN ARDO		925,490	30,849		117,228	11.2	477,013	15,900		484			
CAMPBELL AREA		922,470	30,749		112,530	10.9	477,013	15,900		475			
LOMBARDI	S	587,259	19,575	1310	104,742	15.1	168,395	5,613	287	303	300.2	65.2	3
AURIGNAC	S	335,211	11,174	9124	7,788	2.3	308,618	10,287	921	172	168.5	66.3	3
SUPERIOR AREA													
AURIGNAC	S	3,020	101		4,698	60.9				9	8.2	12.3	
COASTAL REGION TOTAL		7,071,284	235,709	17434	5,121,579	42.0	12,239,648	407,988	1,731	5359	5,130.1	45.9	28
SCHEDULED		4,973,041	165,765							2329	2,255.5	73.5	20
UNSCHEDULED		2,098,243	69,944							3030	2,873.6	24.3	8

Conservation Committee of California Oil Producers

CALIFORNIA OIL FIELD AND POOL OIL AND GAS PRODUCTION

APRIL 1955

		OIL PROD. TOTAL BARRELS	OIL PROD. BARRELS DAILY	EXCESS or SHORTAGE B/D	WATER PRODUCTION TOTAL BARRELS	WATER PRODUCTION WATER CUT%	GAS PRODUCTION TOTAL MCF	GAS PRODUCTION MCF DAILY	GAS-OIL RATIO	TOTAL NO PROD WELLS	NO WELLS ON FULL TIME	OIL RATE B/D WELL	NO NEW WELL COMP
LOS ANGELES REGION													
ALONDRA	U	5,484	181		24,334	81.6	4,154	138	757	5	4.9	37.3	
BANDINI	S	23,598	787	222*	2,972	11.2	72,513	2,417	3,073	8	7.9	99.6	1
BELMONT OFF-SHORE	U	5,699	190		67	1.2	1,488	50	261	6	1.7	111.8	1
BEVERLY HILLS		4,979	166		14,280	74.1	1,209	40		3			
WOLFSKILL	U	2,661	89		14,280	84.3	309	10	116	2	2.0	44.5	
20TH CENTURY-FOX	S	2,318	77	337*			900	30	388	1	.5	154.0	1
BREA-OLINDA		624,813	20,827		360,721	36.6	801,113	26,703		577			
BREA AREA		389,347	12,978		194,867	33.4	576,867	19,229		270			
MIOCENE C	S	412	14		38	8.4	1,477	49	3,585	1	1.0	14.0	
MIOCENE D	S	23,495	783	181	474	2.0	21,405	713	911	7	6.3	124.3	1
OTHERS	U	365,440	12,181		194,355	34.7	553,985	18,466	1,516	262	254.3	47.9	3
OLINDA AREA	U	145,939	4,865		138,436	48.7	98,314	3,277	674	248	242.5	20.1	
OLINDA EAST AREA	U	249	8		388	60.9	95	3	382	1	.5	16.0	
TONNER AREA	S	89,278	2,976	303	27,030	23.2	125,837	4,195	1,409	58	57.4	51.8	
COYOTE EAST		176,045	5,868		253,042	59.0	185,767	6,192		265			
HUALDE	U	6,071	202		22,260	78.6	4,499	150	741	18	16.9	12.0	
ANAHEIM	U	83,927	2,798		167,962	66.7	77,510	2,584	924	143	140.2	20.0	
MIOCENE A	U	22,010	734		39,703	64.3	29,294	976	1,331	43	42.3	17.4	
STERN	U	64,037	2,135		23,117	26.5	74,464	2,482	1,163	61	60.7	35.2	
COYOTE WEST		196,050	6,535		574,937	74.6	1,079,771	35,992		330			
TOP EAST	U	3,344	111		59,072	94.6	1,830	61	547	8	8.0	13.9	
MAIN	U	68,160	2,272		289,759	81.0	53,161	1,772	780	141	137.2	16.6	
99	U	56,879	1,896		127,907	69.2	44,775	1,492	787	90	88.7	21.4	
LOWER 99 EAST	U	7,987	266		24,880	75.7	108,455	3,615	13,579	13	12.4	21.5	
138	U	4,279	143		9,017	67.8	15,671	522	3,662	7	7.0	20.4	
EMERY EAST	U	27,727	924		32,898	54.3	264,621	8,821	9,544	37	36.4	25.4	
EMERY WEST	U	27,221	907		30,933	53.2	590,655	19,688	21,699	33	32.2	28.2	
MCNALLY	U	453	15		471	51.0	603	20	1,331	1	1.0	15.0	
DOMINGUEZ		266,532	8,884		632,279	70.3	358,964	11,965		334			
DEL AMO ESTATE BLOCK	U	1,812	60		5,524	75.3	2,009	67	1,109	3	2.8	21.4	
EAST BLOCK		70,104	2,337		190,656	73.1	56,741	1,891		86			
PLIOCENE 3,4 & U-5	U	18,352	612		52,386	74.1	16,316	544	889	19	17.4	35.2	
PLIOCENE L-5 & 6	U	9,112	304		12,789	58.4	17,069	569	1,873	11	10.8	28.1	
PLIOCENE OTHERS	U	42,640	1,421		125,481	74.6	23,356	779	548	56	54.2	26.2	
EAST CENTRAL BLOCK		46,506	1,550		110,606	70.4	40,144	1,338		59			
PLIOCENE	U	46,401	1,547		110,470	70.4	39,511	1,317	852	58	56.7	27.3	
MIOCENE B & C	U	105	3		136	56.4	633	21	6,029	1	1.0	3.0	
SOUTHEAST BLOCK													
MIOCENE	U	6,074	202		4,243	41.1	9,441	315	1,554	6	5.8	34.8	
WEST CENTRAL BLOCK		68,875	2,296		211,101	75.4	151,107	5,037		103			
PLIOCENE	U	40,438	1,348		186,042	82.1	59,974	1,999	1,483	54	53.2	25.3	
MIOCENE 7	U	5,069	169		14,211	73.7	15,928	531	3,142	14	12.3	13.7	1
MIOCENE 8	U	13,959	465		5,290	27.5	55,099	1,837	3,947	19	18.1	25.7	

MIOCENE 7	U	13,959	465		5,296	27.5									
MIOCENE 8															

CALIFORNIA OIL FIELD AND POOL
OIL AND GAS PRODUCTION
APRIL 1955

Page 17

Conservation Committee of
California Oil Producers

		OIL PROD. TOTAL BARRELS	OIL PROD. BARRELS DAILY	EXCESS or SHORTAGE B/D	WATER PRODUCTION TOTAL BARRELS	WATER PRODUCTION WATER CUT %	GAS PRODUCTION TOTAL MCF	GAS PRODUCTION MCF DAILY	GAS-OIL RATIO	TOTAL NO. PROD. WELLS	NO. WELLS ON FULL TIME #	OIL RATE B/D WELL	NO. NEW WELL COMP.
MIOCENE 7 & 8 SOUTH	U	9,409	314		5,558	37.1	20,106	670	2,137	16	14.9	21.1	
WEST BLOCK		73,161	2,439		110,149	60.1	99,522	3,317		77			
PLIOCENE 5	S	14,443	481	91	21,971	60.3	13,762	459	953	6	5.8	82.9	
PLIOCENE OTHERS	U	3,230	108		49,973	93.9	3,497	117	1,083	4	4.0	27.0	
MIOCENE 6,7 & 8	S	55,488	1,850		38,205	40.8	82,263	2,742	1,483	67	65.8	28.1	1
EAST LOS ANGELES	U	18,884	629		57,962	75.4	23,958	799	1,269	19	18.9	33.3	
EL SEGUNDO	U	6,235	208		74,106	92.2	786	26	126	17	16.8	12.4	
HUNTINGTON BEACH		2,158,164	71,938		1,602,287	42.6	1,893,442	63,114		1691			
HUNTINGTON AVENUE AREA		310,240	10,341		32,379	9.5	407,176	13,572	1,312	165			
JONES	S	276,800	9,227	588*	23,538	7.8	376,716	12,557	1,361	154	121.2	76.1	56
MAIN	S	32,772	1,092	222	8,639	20.9	30,460	1,015	929	10	10.0	109.2	
OTHERS	U	668	22		202	23.2				1	1.0	22.0	
NORTH AREA		420,771	14,026		828,182	66.3	322,656	10,755		577			
TAR BOLSA	U	63,745	2,125		332,964	83.9	32,714	1,090	513	112	108.0	19.7	
FAULT ZONE	U	14,504	483		4,989	25.6	31,545	1,051	2,175	14	13.9	34.7	
ASHTON	U	342,522	11,417		490,229	58.9	258,397	8,613	754	451	434.4	26.3	1
SLOUGH AREA		69,440	2,315		9,317	11.8	203,554	6,785		14			
RAMSER EAST	S	28,742	958	4	2,811	8.9	173,375	5,779	6,032	8	6.2	154.5	4
RAMSER WEST	S	37,166	1,239	472	5,904	13.7	30,179	1,006	812	5	4.3	288.1	1
LOMITA LANDS	S	3,532	118	132*	602	14.6				1	1.0	118.0	
SOUTH AREA ON-SHORE		223,442	7,448		414,723	65.0	192,874	6,429		440			
TAR ZONE	U	39,162	1,305		181,600	82.3	13,776	459	352	156	152.0	8.6	
A-37	U	95,974	3,199		20,377	17.5	57,583	1,919	600	89	87.2	36.7	1
A-66	U	15,214	507		10,478	40.8	50,997	1,700	3,352	20	20.0	25.4	
JONES	U	19,341	645		27,811	59.0	15,935	531	824	32	31.4	20.5	
MAIN	U	53,751	1,792		174,457	76.4	54,583	1,819	1,015	143	139.5	12.8	
SOUTH AREA - OFF-SHORE		1,132,224	37,740		309,255	21.5	765,806	25,527		488			
JONES	S	247,077	8,236	575	113,065	31.4	155,680	5,189	630	133	127.1	64.8	1
MAIN	U	885,147	29,505		196,190	18.1	610,126	20,337	689	355	345.9	85.3	3
SURF AREA													
WEST BLOCK	U	2,047	68		8,431	80.5	1,376	46	672	7	7.0	9.7	
HYPERION	U	1,425	47		440	23.6	685	23	481	2	2.0	23.5	
INGLEWOOD		359,769	11,992		1,114,324	75.6	285,524	9,517		476			
VICKERS	U	241,813	8,060		926,632	79.3	129,377	4,313	535	353	345.6	23.3	
RINDGE	U	29,404	980		113,154	79.4	27,567	919	938	39	37.1	26.4	
RUBEL	U	37,220	1,241		43,968	54.2	41,461	1,382	1,114	31	30.6	40.6	
MOYNIER	U	36,752	1,225		24,359	39.9	64,359	2,145	1,751	31	30.6	40.0	
SENTOUS	U	14,580	486		6,211	29.9	22,760	759	1,561	22	20.3	23.9	
LAWNDALE		9,072	302		144,481	94.1	18,463	615		8			
UPPER POOL	U	265	9		3,241	92.4	3		11	2	1.7	5.3	
JOHNSON	U	8,807	294		141,240	94.1	18,460	615	2,096	6	5.9	49.8	
LONG BEACH		876,921	29,230		3,280,313	78.9	1,891,816	63,060		1207			
OLD AREA		547,076	18,236		3,148,810	85.2	531,404	17,713		1157			
UPPER POOLS	U	516,998	17,233		3,109,101	85.7	477,746	15,925	924	1111	1,092.6	15.8	
WARDLOW	U	11,841	395		2,630	18.2	30,419	1,014	2,569	20	19.9	19.8	

Conservation Committee of California Oil Producers

CALIFORNIA OIL FIELD AND POOL
OIL AND GAS PRODUCTION
APRIL 1955

		OIL PRODUCTION TOTAL BARRELS	OIL PRODUCTION BARRELS DAILY	EXCESS or SHORTAGE B/D	WATER PRODUCTION TOTAL BARRELS	WATER PRODUCTION WATER CUT %	GAS PRODUCTION TOTAL MCF	GAS PRODUCTION MCF DAILY	GAS-OIL RATIO	TOTAL NO PROD. WELLS	NO. WELLS ON FULL TIME	OIL RATE B/D WELL	NO. NEW WELL COMP.
CIRCLE	U	1,643	55		356	17.8	1,731	58	1,054	2	2.0	27.5	
DE SOTO-SOUTH FLANK	U	13,910	464		14,712	51.4	17,142	571	1,232	21	20.8	22.3	
DE SOTO-NORTH FLANK	U	2,684	89		22,011	89.1	4,386	146	1,627	3	2.8	31.8	
NORTHWEST EXTENSION AREA	U	8,287	276		9,990	54.7	3,461	115	418	15	14.9	18.5	
AIRPORT AREA	S	321,558	10,718	2501	121,513	27.4	1,356,951	45,231	4,220	35	32.8	326.8	5
MONTEBELLO		125,840	4,195		1,215,688	90.6	222,120	7,404		318			
EAST AREA-NUTT	U	1,851	62		21,185	92.0	7,693	256	4,156	5	4.7	13.2	
EAST AREA-CRUZ	U	261	9		10	3.7				1	1.0	9.0	
MAIN AREA													
BALDWIN 1-2-3	U	96,678	3,223		955,236	90.8	152,707	5,090	1,580	236	229.3	14.1	
WEST AREA	U	27,050	902		239,257	89.8	61,720	2,057	2,282	76	74.8	12.1	
NEWPORT													
CAGNEY AREA	U												
NEWPORT WEST		136,522	4,551		121,519	47.1	9,199	307		221			
ALDRICH AREA-B	U	13,256	442		12,163	47.9	2,175	72	164	23	22.0	20.1	
ALDRICH AREA-C	U	2,056	69		2,544	55.3	774	26	376	7	7.0	9.9	1
ANAHEIM SUGAR AREA	U	33,815	1,127		58,723	63.5	1,909	64	56	35	34.3	32.9	
MAIN AREA	U	49,037	1,635		37,710	43.5	1,100	37	22	131	129.0	12.7	1
OFF-SHORE AREA	S	20,749	692	107	2,654	11.3	3,044	101	147	7	7.0	98.9	
SURF AREA													
EAST BLOCK	U	17,609	587		7,725	30.5	197	7	11	18	17.6	33.4	
PLAYA DEL REY		38,759	1,292		396,481	91.1	119,2872	3,976		98			
DEL REY HILLS AREA	U	6,588	220		53,741	89.1	64,677	2,156	9,817	13	12.6	17.5	
KIDSON AREA	U												
VENICE AREA	U	32,171	1,072		342,740	91.4	54,610	1,820	1,697	85	83.5	12.8	
POTRERO		27,345	911		50,024	64.7	142,070	4,736		37			
EAST AREA	U	14,523	484		46,842	76.3	54,104	1,803	3,725	22	21.9	22.1	
INGLEWOOD CITY AREA	U	12,822	427		3,182	19.9	87,966	2,932	6,861	15	14.9	28.7	
RICHFIELD		210,453	7,015		220,222	51.1	189,599	6,320		415			
EAST AREA	U	127,554	4,252		114,495	47.3	133,434	4,448	1,046	313	308.4	13.8	2
NORTH AREA	U	1,013	34		603	37.3	671	22	662	1	1.0	34.0	
WEST AREA	U	81,886	2,730		105,124	56.2	55,494	1,850	678	101	99.1	27.5	
ROSECRANS		106,140	3,538		213,283	66.8	275,356	9,178		226			
ATHENS AREA		21,032	701		100,497	82.7	27,827	928		62			
UPPER	U	7,871	262		33,802	81.1	8,425	281	1,070	25	24.0	10.9	
LOWER	U	5,631	188		50,360	89.9	10,226	341	1,816	25	23.6	8.0	
ODEA	U	7,530	251		16,335	68.4	9,176	306	1,219	12	11.0	22.8	
BANK AREA-7 & 8	U	6,326	211		1,015	13.8	13,800	460	2,181	3	3.0	70.3	
HOWARD TOWNSITE AREA		15,840	528		7,006	30.7	106,045	3,535		26			
ZINS	U	1,792	60		618	25.6	34,388	1,146	19,190	2	2.0	30.0	
7 & 8	U	14,048	468		6,388	31.3	71,657	2,389	5,101	24	23.5	19.9	
MAIN AREA		46,650	1,555		91,725	66.3	102,148	3,405		100			
MAXWELL-HOGE	U	9,813	327		54,224	84.7	13,214	440	1,347	20	19.2	17.0	
ZINS	U	12,899	430		21,024	62.0	31,129	1,038	2,413	25	24.7	17.4	

Conservation Committee of California Oil Producers

CALIFORNIA OIL FIELD AND POOL
OIL AND GAS PRODUCTION
APRIL 1955

		OIL PROD. TOTAL BARRELS	OIL PROD. BARRELS DAILY	EXCESS or SHORTAGE B/D	WATER PRODUCTION TOTAL BARRELS	WATER PRODUCTION WATER CUT %	GAS-PRODUCTION TOTAL MCF	GAS-PRODUCTION MCF DAILY	GAS-OIL RATIO	TOTAL NO PROD WELLS	NO WELLS ON FULL TIME	OIL RATE B/D WELL	NO NEW WELL COMP
ODEA	W	18,776	626		12,987	40.9	45,195	1,506	2,407	46	44.3	14.1	
BTH	U	5,162	172		3,490	40.3	12,610	420	2,443	9	9.0	19.1	
SOUTH AREA		16,292	543		13,040	44.5	25,536	851		35			
ZINS	U	867	29		386	30.8	3,538	118	4,081	4	3.4	8.5	
ODEA	U	12,189	406		6,326	34.2	16,093	536	1,320	25	23.7	17.1	
BTH	U	3,236	108		6,328	66.2	5,905	197	1,825	6	6.0	18.0	
SANSINENA		301,664	10,055		29,037	8.8	303,528	10,117		109			
EAST AREA		102,133	3,404		6,765	6.2	95,460	3,182		20			
MIOCENE C	S	86,101	2,870	543	4,423	4.9	69,640	2,321	809	13	11.8	243.2	1
MIOCENE D	S	16,032	534	12	2,342	12.7	25,820	861	1,611	7	7.0	76.3	
LINDAUER AREA													
MIOCENE A	W	952	32		648	40.5	435	14	457	1	1.0	32.0	
NARANJAL AREA		30,058	1,002		2,494	7.7	56,004	1,867		12			
MIOCENE A	U	18,315	610		604	3.2	37,686	1,256	2,058	9	9.0	67.8	
MIOCENE C	U	11,743	391		1,890	13.9	18,318	611	1,560	3	3.0	130.3	1
WEST AREA		168,433	5,614		19,124	10.2	151,629	5,054		75			
MAIN BLOCK													
MIOCENE C-D	S	159,250	5,308	108	12,570	7.3	147,234	4,908	925	62	61.4	86.4	
6-A BLOCK													
MIOCENE C-D	W	1,834	61		6,441	77.8	462	15	252	2	2.0	30.5	
NEW ENGLAND BLOCK													
MIOCENE D	U	2,397	80		48	2.0	755	25	315	6	6.0	13.3	
CURTIS BLOCK													
MIOCENE C-D	U	4,952	165		65	1.3	3,178	106	642	5	5.0	33.0	
OTHER AREAS		88	3		6	6.4				1			
PLIOCENE	W	88	3		6	6.4				1	.2	15.0	1
MIOCENE	U												
SANTA FE SPRINGS		402,435	13,414		1,951,740	82.8	507,018	16,900		593			
OCONNELL SOUTHEAST	U	3,781	126		9,028	70.5	2,138	71	565	6	5.9	21.4	
OTHERS	U	398,654	13,288		1,922,712	82.8	504,880	16,829	1,266	587	573.4	23.2	1
SEAL BEACH		295,468	9,849		868,801	74.6	435,253	14,508		237			
ALAMITOS AREA	U	16,236	541		169,761	91.3	19,991	666	1,231	44	43.1	12.6	
NORTH BLOCK		156,023	5,201		157,066	50.2	306,326	10,211		95			
SAN GABRIEL	U	2,305	77		51,029	95.7	1,685	56	731	4	4.0	19.3	
SELOVER	U	1,690	56		22,102	92.9	2,128	71	1,259	4	3.8	14.7	
WASEM	U	17,060	569		28,203	62.3	23,413	780	1,372	18	17.9	31.8	
MCGRATH	S	134,968	4,499	115	55,732	29.2	279,100	9,303	2,068	69	68.1	66.1	
NORTH BLOCK-EAST EXTENSION													
MCGRATH	S	18,371	612	139	922	4.8	8,961	299	488	4	2.4	255.0	2
SOUTH BLOCK		104,838	3,495		541,052	83.8	99,975	3,332		94			
BIXBY-SELOVER	U	16,353	545		247,441	93.8	16,616	554	1,016	16	14.3	38.1	
WASEM	W	52,357	1,745		273,846	83.9	57,937	1,931	1,107	56	53.0	32.9	
	U									1			
MCGRATH	U	14,170	472		8,725	38.1	8,956	299	632	13	12.6	37.5	

Conservation Committee of California Oil Producers

CALIFORNIA OIL FIELD AND POOL
OIL AND GAS PRODUCTION
APRIL 1955

Page 20

		OIL PROD.		EXCESS or SHORTAGE B/D	WATER PRODUCTION		GAS PRODUCTION		GAS-OIL RATIO	TOTAL NO PROD. WELLS	NO WELLS ON FULL TIME#	OIL RATE B/D WELL	NO NEW WELL COMP.
		TOTAL BARRELS	BARRELS DAILY		TOTAL BARRELS	WATER CUT %	TOTAL MCF	MCF DAILY					
LANE	W	21,958	732		11,040	33.5	16,466	549	750	10	8.7	84.1	1
SUNSET BEACH	S	2,782	93	87*	221	7.4				2	2.0	46.5	
TORRANCE		207,773	6,926		229,070	52.4	141,688	4,723		784			
TAR-RANGER	U	1,470	49		2,276	60.8	1,231	41	837	7	6.9	7.1	
MAIN	U	173,414	5,780		159,414	47.9	100,488	3,350	579	650	640.0	9.0	1
DEL AMO	U	32,889	1,096		67,380	67.2	39,969	1,332	1,215	127	124.4	8.8	
WHITTIER		49,105	1,637		85,872	63.6	28,421	947		128			
CENTRAL AREA		47,308	1,577		82,835	63.6	28,421	947		121			
MAIN	U	26,556	885		82,656	75.7	28,169	939	1,061	111	105.4	8.4	
CENTRAL FEE	S	20,752	692	46	179	.9	252	8	12	10	9.4	73.6	
RIDEOUT HEIGHTS AREA	U	1,797	60		3,037	62.8				7	5.3	11.3	
WILMINGTON		3,217,692	107,255		2,100,401	39.5	2,863,524	95,450		2620			
TERMINAL AREA		1,165,724	38,857		733,446	38.6	956,490	31,883		722			
FAULT BLOCK I		216,037	7,201		385,216	64.1	151,428	5,048		198			
TAR-RANGER-TERMINAL	U	181,212	6,040		359,608	66.5	98,106	3,270	541	155	152.4	39.6	3
FORD	U	19,936	665		8,133	29.0	33,731	1,124	1,692	26	24.8	26.8	
237	U	14,889	496		17,475	54.0	19,591	653	1,316	17	16.7	29.7	
FAULT BLOCK II		154,562	5,152		119,055	43.5	172,297	5,743		185			
TAR-RANGER	U	119,681	3,989		98,469	45.1	96,859	3,229	809	137	134.2	29.7	
U.P.	U	7,189	240		3,963	35.5	18,366	612	2,555	10	9.7	24.7	
FORD	U	15,217	507		8,910	36.9	38,919	1,297	2,558	25	24.5	20.7	
237	U	12,475	416		7,713	38.2	18,153	605	1,455	13	12.9	32.2	
FAULT BLOCK II-A TERMINAL U & L	S	283,916	9,464	37	73,006	20.5	245,190	8,173	864	105	103.6	91.4	
FAULT BLOCK II-B TERMINAL U & L	S	64,536	2,151	846	6,152	8.7	38,734	1,291	600	19	18.7	115.0	
FAULT BLOCK III		446,673	14,889		150,017	25.1	348,841	11,628		215			
TAR-RANGER	S	196,576	6,552	268	87,630	30.8	162,237	5,408	825	139	137.5	47.7	
UPPER TERMINAL	S	217,006	7,233	1644	51,230	19.1	141,121	4,704	650	54	52.5	137.8	1
LOWER TERMINAL	S	33,091	1,103	122	11,157	25.2	45,483	1,516	1,374	22	21.9	50.4	
HARBOR AREA		1,787,960	59,598		1,124,526	38.6	1,778,133	59,271		1300			
FAULT BLOCK IV		638,242	21,275		458,987	41.8	391,696	13,056		492			
TAR	U	57,014	1,900		52,862	48.1	29,644	988	520	50	47.7	39.8	
RANGER	U	146,765	4,892		63,680	30.3	109,986	3,666	749	161	158.2	30.9	
TERMINAL U & L	U	416,924	13,897		335,361	44.6	219,810	7,327	527	259	247.9	56.1	1
U.P.	U	17,539	585		7,084	28.8	32,256	1,075	1,839	22	21.8	26.8	
FAULT BLOCK IV-A 237	U	9,047	302		8,307	47.9	14,931	498	1,650	8	6.8	44.4	
FAULT BLOCK IV-B 237	U	17,681	589		28,064	61.3	29,362	979	1,661	29	28.9	20.4	
FAULT BLOCK IV-AB FORD	U	15,048	502		6,588	30.4	29,023	967	1,929	20	20.0	25.1	
FAULT BLOCK IV-D UP-FORD-237	S	42,673	1,422		64,177	60.1	66,449	2,215	1,557	72	69.2	20.5	

Conservation Committee of California Oil Producers

CALIFORNIA OIL FIELD AND POOL
OIL AND GAS PRODUCTION
APRIL 1955

Page 21

		OIL PROD. TOTAL BARRELS	OIL PROD. BARRELS DAILY	EXCESS or SHORTAGE B/D	WATER PRODUCTION TOTAL BARRELS	WATER PRODUCTION WATER CUT %	GAS PRODUCTION TOTAL MCF	GAS PRODUCTION MCF DAILY	GAS-OIL RATIO	TOTAL NO PROD WELLS	NO WELLS ON FULL TIME	OIL RATE B/D WELL	NO NEW WELL COMP
FAULT BLOCK V		349,430	11,648		116,963	25.1	366,069	12,202		359			
TAR	S	148,484	4,949	129	90,487	37.9	174,976	5,832	1,178	93	92.6	53.4	
RANGER	W	200,946	6,698		26,476	11.6	191,093	6,370	951	266	268.6	25.7	
FAULT BLOCK V-A		33,341	1,111		59,676	64.2	39,354	1,312		22			
TERMINAL U & L	W	15,132	504		53,337	77.9	12,869	429	850	13	12.9	39.1	
U.P.	W	7,052	235		4,214	37.4	9,693	323	1,375	4	4.0	58.8	
FORD	W	11,157	372		2,125	16.0	16,792	560	1,505	5	5.0	74.4	
FAULT BLOCK V-B		345,878	11,529		315,525	47.7	458,592	15,286		152			
UPPER TERMINAL	S	197,418	6,581	385	228,669	53.7	237,207	7,907	1,202	97	95.7	68.8	
LOWER TERMINAL	S	113,085	3,769	648	73,069	39.3	176,630	5,888	1,562	37	36.3	103.5	
U.P.	S	22,779	759	1449	6,165	21.3	26,672	889	1,171	10	10.0	75.9	
FORD	W	12,596	420		7,622	37.7	18,083	603	1,436	8	7.7	54.5	
FAULT BLOCK VI		356,620	11,221		66,239	16.4	382,657	12,755		148			
RANGER	W	71,950	2,398		5,790	7.4	101,153	3,372	1,406	79	79.0	30.4	
UPPER TERMINAL	S	131,548	4,385	432	18,890	12.6	178,258	5,942	1,355	32	31.7	138.9	1
LOWER TERMINAL	S	88,627	2,954		32,136	26.6	68,695	2,290	775	21	20.3	145.5	
FORD	S	22,870	762	95	5,780	20.2	24,243	808	1,060	9	9.0	84.7	
U.P.	S	21,625	721	82	3,643	14.4	10,308	344	477	5	4.3	167.7	1
TOWN LOT AREA		264,008	8,800		242,429	47.9	128,901	4,297		598			
TAR-RANGER-TERMINAL	W	253,297	8,443		238,517	48.5	121,077	4,036	478	575	562.7	15.0	1
FORD	W	10,711	357		3,912	26.8	7,824	261	730	23	22.9	15.9	
YORBA LINDA		29,377	979		38,040	56.4	1,950	65		49			
SHALLOW	W	10,176	339		4,266	29.5				18	14.8	24.2	4
SMITH	W	9,452	315		23,280	71.1	1,950	65	206	21	20.9	15.1	
SMELL	W	9,749	325		10,494	51.8				12	11.1	29.3	
OTHER FIELDS		33,545	1,118		78,208	70.0	40,753	1,358		151			
CHINO HILLS	W	1,411	47		328	18.9	15		11	8	7.3	6.4	
CHINO-MAHALA	W												
KRAEMER	W	7,059	235		10,219	59.1	4,385	146	621	21	19.8	11.9	
LEFFINGWELL	W	8,792	293		15,361	63.6	27,483	916	3,126	12	10.6	27.6	
LOS ANGELES	W	3,500	117		7,500	68.2				80	80.0	1.5	
NORTH WHITTIER HEIGHTS	W	242	8		4	1.6				3	2.7	3.0	
OLIVE	W	2,216	74		519	18.9	190	140	1,891	4	4.0	18.5	
PUENTE HILLS	W	2,663	89		1,671	38.6	3,525	117	1,324	8	8.0	11.1	
SALT LAKE	W	5,833	194		38,209	86.8				7	6.9	28.1	
SAN CLEMENTE	W												
TALBERT	W	110	4		165	60.0				1	1.0	4.0	
TURNBULL	W	1,355	45		4,203	75.6	1,185	38	854	4	3.6	12.5	
WALNUT	W	366	12		37	9.2				3	3.0	4.0	
LOS ANGELES REGION TOTAL		9,918,570	330,619	8597	15,715,152	61.3	1,899,419	396,647	1,200	10934	10,639.8	31.1	105
SCHEDULED		3,199,918	106,661							1383	1,319.9	80.8	77
UNSCHEDULED		6,718,652	223,958							9553	9,320.1	24.0	28
STATE TOTAL		29,191,331	973,044	30743	55,347,225	65.5	66,668,686	1555,623	1,599	33314	32,139.7	30.3	199
SCHEDULED		14,701,535	490,045							5728	5,521.7	88.7	114
UNSCHEDULED		14,489,796	482,999							27586	26,617.4	18.1	85

Conservation Committee of
California Oil Producers
June 28, 1955

CALIFORNIA OIL FIELD AND POOL
OIL AND GAS PRODUCTION
APRIL 1955

	OIL PROD. TOTAL BARRELS	OIL PROD. BARRELS DAILY	EXCESS or SHORTAGE B/D	WATER PRODUCTION TOTAL BARRELS	WATER PRODUCTION WATER CUT%	GAS PRODUCTION TOTAL MCF	GAS PRODUCTION MCF DAILY	GAS-OIL RATIO	TOTAL NO PROD WELLS	NO WELLS ON FULL TIME#	OIL RATE B/D WELL	NO NEW WELL COMP
CONDENSATE												
COLES LEVEE SOUTH												
Condensate-Debutanized	72,838	2,428		2,711	3.6	1,607,326	53,578	22,067	28	26.3	92.3	
PALOMA												
Paloma												
Condensate-Debutanized	77,571	2,586	912	5,798	7.0	4,037,687	134,590	52,052	59	57.3	45.1	

Minus figures in "Total No. Prod. Wells" column represent the number of dual wells which are counted in each pool, but deducted to secure the area and field total. Thus the dual zone wells are counted only once for the area and field total.

(Z) Includes 3,600 MCF withdrawn from storage Olinda Area - Brea-Olinda Field

(Z) Includes 59,972 MCF withdrawn from storage Del Rey Hills and Venice Areas - Playa Del Rey Field

\# A factor representing the average number of wells producing full time during this month. Equal to total well days divided by number of calendar days

* Underproduction

** Excludes debutanized-condensate - see Page 21

INJECTED GAS
APRIL 1952

	NO. WELLS	M. C. F.	M.C.F. DAILY
BELRIDGE NORTH - Belridge "64"	8	1,627,700	54,257
- "Y" Sand	1	168,400	5,633
BUENA VISTA - Buena Vista Hills Area - Others	4	34,225	1,141
- "27-B"	7	943,006	31,433
CANAL	9	115,486	3,850
COALINGA GROUP - COALINGA EAST EXTENSION - Northeast Area - Eocene	1	-	-
- Nose Area - Eocene	3	626,061	20,869
COLES LEVEE NORTH - Richfield Western Area - "21-1"	1	823,797	27,460
- Western "29"	1	144,272	4,809
- Main Western	7	2,488,939	82,965
COLES LEVEE SOUTH - Plant Condensate - Stevens F-1 & F-2	5	1,831,715	61,157
- Crude Oil - Stevens F-1	1	50,069	1,669
CUYAMA GROUP - CUYAMA SOUTH - Main Area - Homan	7	900,810	30,027
- RUSSELL RANCH - Main Area - Dibblee	6	579,374	19,312
ELK HILLS - Main Area - Upper	10	81,917	2,730
GREELEY - Rio Bravo-Vedder	4	447,708	14,924
KETTLEMAN NORTH DOME - Temblor	21	2,581,823	86,061
- Vaqueros	6	106,882	3,563
LOS LOBOS - "27-20" (Reef Ridge) ∅	1	17,243	575
McDONALD ANTICLINE - Layman Area	1	-	-
McKITTRICK GROUP - CYMRIC - Salt Creek Main Area - Carneros	6	72,827	2,428
PALOMA - Main Area - Paloma - Plant Condensate	14	2,948,351	98,278
RIO BRAVO - Rio Bravo-Vedder	6	552,242	18,408
TEN SECTION - Stevens	1	192,565	6,419
CAPITAN - Erburu	1	15,878	529
CASTAIC JUNCTION - "10"	1	172,613	5,754
CAT CANYON GROUP - CAT CANYON WEST - Los Flores	2	-	-
ELWOOD - Vaqueros	1	56,650	1,888
HONOR RANCHO - Wayside	1	119,666	3,989
LOMPOC	2	13,977	466
NEWHALL-POTRERO - 1-2-3	8	822,590	27,420
- 5th	2	248,234	8,274
- 6th	2	156,895	5,230
- 7th	1	10,438	348
COYOTE WEST - Lower "99" East	1	108,453	3,615
- Emery East	2	196,419	6,547
- Emery West	3	588,078	19,603
HUNTINGTON BEACH - South Area (Off-Shore) - Jones	2	42,434	1,414
ROSECRANS - Main Area - O'Dea	1	11,449	382
WILMINGTON - Fault Block V-B - Upper Terminal	4	136,842	4,561
- Fault Block V-B - Lower Terminal	4	105,935	3,531
- Fault Block VI - Upper Terminal	2	74,256	2,475
TOTAL:	171	20,219,219	673,974
∅ Correction - LOS LOBOS - "27-20" (Reef Ridge) - January		1,839	59
- February		15,044	537
- March		18,708	603

APRIL 1955 — Page 24

UNIDENTIFIED TANK VAPORS NOT INCLUDED IN POOL OR FIELD TOTALS - GAS

	M. C. F.	M.C.F. DAILY
VENTURA	93,408	3,047

INJECTED WATER

	TOTAL BARRELS	BARRELS DAILY
BUENA VISTA - Buena Vista Hills Area - Others	119,111	3,970
COALINGA GROUP - COALINGA - Eastside Area - Temblor	177,695	5,923
CUYAMA GROUP - CUYAMA SOUTH - Main Area - Homan	45,632	1,521
GUERNSEY - RUSSELL RANCH - Main Area - Dibblee	380,725	12,691
- Stevens	71,971	2,399
- Vedder	76,798	2,560
LOST HILLS - Main	16,348	545
MIDWAY-SUNSET	15,061	502
MOUNT POSO	4,066	136
PLEITO CREEK	940	31
ROSEDALE - Stevens	21,275	709
TAFT GROUP - TAFT-GRAPEVINE - Western Area - S	53,247	1,775
OTHER FIELDS - ROSEDALE RANCH	22,696	756
BARDSDALE - Sespe	13,160	439
DEL VALLE - Sherman	134,591	4,486
HEMMALL-POSEDO - 1-2-3	14,231	476
PLACERITA	79,515	2,651
PIRU GROUP - EUREKA	69,858	2,295
SHIELDS CANYON	12,484	465
SOUTH MOUNTAIN	4,784	163
TORREY CANYON - Upper Sespe	65,777	2,193
WEST MOUNTAIN - Sespe	13,000	433
CASMALIA	131,061	4,369
CAT CANYON - Pliocene	42,761	1,425
LOMPOC	-	-
ORCUTT	106,494	3,550
COYOTE EAST - Anaheim	9,328	311
COYOTE WEST - Main	72,937	2,431
- 4900	116,357	3,879
- Emery East	38,823	1,294
DOMINGUEZ - East Central Block - Pliocene	397,452	13,248
- West Block - Pliocene 5	56,595	1,885
INGLEWOOD - Pliocene	44,483	1,483
RICHFIELD - West Area	33,028	1,101
TORRANCE	31,364	1,045
WILMINGTON - Fault Block III - Tar-Ranger	100,814	3,361
- Fault Block V-B - Upper Terminal	119,124	3,971
YORBA LINDA	1,413	47
OTHER FIELDS - TURNBULL	4,118	137
TOTAL:	2,717,895	90,596

Mr. HÉBERT. Now, at this point also in connection with the executive sessions which we had at that time and discussion which we had in connection with the status of General White and Mr. Stewart, the chairman received a call from General White that afternoon following the executive session, at which he asked the chairman to issue a statement in compliance with the suggestion made at the executive session. The chairman did issue such a statement, and without objection on the part of the committee I ask that that statement be made a part of the record, in order that it may be in accordance with the understanding of the executive session, and the testimony in open session the day previous.

(The information referred to is as follows:)

PRESS RELEASE, FOR IMMEDIATE RELEASE, JULY 8, 1955

Congressman F. Edward Hébert, Democrat, Louisiana, chairman of the Special Investigating Subcommittee of the House Armed Services Committee, referring to the testimony of Brig. Gen. W. W. White, Staff Director of the Petroleum Logistics Division in the Office of the Assistant Secretary of Defense, in which General White advised the subcommittee that while on active duty as a brigadier general in the Army Reserve he was receiving from Esso Export Corp. the difference between his earnings as a brigadier general and his salary as an official of that company, said:

"I have been questioned about the propriety of General White receiving an income from Esso Export Co. while on duty as a United States Army officer. I asked the question of General White and got a prompt response that he was receiving the difference between his salary as a brigadier general and his salary at Esso Export Corp. while he was recalled to active duty. This practice is in conformity with the long-standing policy of that company.

"The policy of the United States Government is expressed in an act of Congress which specifically authorized the receipt of such payments by persons in the military service. What General White and his employer have been doing is authorized by the law.

"Section 454 (f), of title 50, United States Code Appendix Universal Military Training and Service Act, provides:

"'(f) Nothing contained in this or any other Act shall be construed as forbidding the payment of compensation by any person, firm, or corporation to persons inducted into the Armed Forces of the United States for training and service under this title, or to members of Reserve components of such forces now or hereafter on any type of active duty, who, prior to their induction or order to active duty, were receiving compensation from such person, firm, or corporation.'

"General White was educated as a cadet at West Point and sent as an Army officer to the Massachusetts Institute of Technology. He won his wings and his service ribbons on active duty for the United States. He resigned from the Regular service and went into the Reserve. As a Reserve officer, he was called back for duty. That service on active duty will terminate in February 1956 unless there are hostilities.

"The subcommittee's inquiry was in conformance with its long-established practice of knowing all about witnesses appearing before it. The subcommittee has the duty of weighing the value of a witness' opinion in the light of experience and interest, just as background. There is no implication indicated or suggested by any question asked by the subcommittee that there was any violation of law. The statute makes that clear.

"Mr. H. A. Stewart, of the Oil and Gas Division of the Interior Department, was receiving retirement pay from the Texas Co. We have a right to know that he was an employee of the Texas Co.

"The money he is receiving is money which he earned and is being returned to him as an annuity for the 30 years he paid into this company's funds.

"No statutes of the United States prohibit anyone from purchasing a retirement annuity, whether from his company or another concern, and then working for the Government.

"I am not passing any of the proprieties involved. That is a matter of individual judgment and choice. There has been no violation of law.

"F. EDWARD HÉBERT, *Chairman*."

WASHINGTON 7, D. C., *July 14, 1955.*

DEAR MR. HÉBERT: I want very much to express to you my sincere appreciation for the forthright and accurate clarification which you issued on July 8 in connection with my testimony before the Investigations Subcommittee of the House Committee on Armed Services. The release should dispel some of the misinterpretation and innuendoes which resulted from the publication of the United Press story.

Sincerely yours,

W. W. WHITE.

Mr. HÉBERT. Now Mr. Courtney.

Mr. COURTNEY. That is all for Mr. Kirk.

Mr. HÉBERT. Mr. Bates.

Mr. BATES. Mr. Chairman, I didn't have the opportunity to go to California when the committee went out because of legislation on the floor. But I would like to ask the witness the purpose of the insertions which he has made in the record here this morning.

Mr. KIRK. We thought we would like to make the record as complete and factual as possible and we thought there was a lack of some information to make it complete. So that is why we asked to put them in at this time.

Mr. BATES. Was that toward any particular end from your point of view?

Mr. KIRK. Only to try to make the record as complete as possible.

Mr. BATES. Is it to attempt to prove the degree of availability quantity of oil available for the west coast?

Mr. KIRK. I think it would; yes, sir.

Mr. BATES. Then that is one of your real purposes?

Mr. KIRK. One of the points that we brought up was the availability of Canadian crude on the west coast. This gives additional information on that point.

Mr. MILLER. Mr. Chairman.

Mr. HÉBERT. Mr. Miller.

Mr. MILLER. You say that since the close of World War II about $1,350 million has been invested on the west coast in oil and gas producing facilities.

Mr. KIRK. One billion—I will have to check this. It is $1,353 million, approximately, is the announced value or original cost of these facilities which have been built or programed at the present time, including gas lines, product lines, crude oil lines and added refining capacity to the Pacific Northwest and such places.

Mr. MILLER. Do you know if that was all private capital or is there any Government money involved?

Mr. KIRK. I am certain it was all private capital.

Mr. MILLER. All private capital?

Mr. KIRK. Yes, sir.

Mr. MILLER. Subscribed by people interested in the oil and gas production on the west coast?

Mr. KIRK. Yes, sir.

Mr. MILLER. And for the west coast?

Mr. KIRK. Yes, sir.

Mr. HÉBERT. Mr. Courtney.

Mr. COURTNEY. That is all.

Mr. HÉBERT. Mr. Fisher.

Mr. FISHER. How does crude production in California today compare with 5 years ago?

Mr. KIRK. Well, today it is about 975,000 barrels a day. I would say it is a little more than it was 5 years ago. I probably have the figures with me. But I couldn't tell you exactly what it was 5 years ago.

Mr. FISHER. Actually, it is about the same, isn't it?

Mr. KIRK. It has held pretty steady in recent years, that is true.

Mr. HÉBERT. Mr. Glasco——

Mr. KIRK. Are you through?

Mr. COURTNEY. That is all. Thank you, Mr. Kirk.

Mr. Glasco, you are ready to go.

Mr. HÉBERT. You may be seated, Mr. Glasco.

Mr. GLASCO. All right.

Mr. HÉBERT. Proceed. You have a prepared statement?

Mr. GLASCO. Yes, I have. Thank you.

Mr. HÉBERT. You proceed in your own way, please.

Mr. SHORT. I suggest that the witness wait until you can put in an appearance at the full committee and then come back.

Mr. HÉBERT. The committee will be recessed for 10 minutes.

(Short recess taken.)

Mr. HÉBERT. The committee will come to order.

When we had recessed, Mr. Glasco, you had just taken the stand. Now I suggest you proceed with your prepared statement, which I ask you please to do now.

STATEMENT OF LOWELL GLASCO, PRESIDENT, WEST COAST PIPELINE CO.

Mr. GLASCO. All right.

My name is Lowell Glasco. I am the president of West Coast Pipeline Co., a Delaware corporation, which presently holds a certificate of necessity for the construction of a pipeline for the handling of crude or products from the west Texas oilfields to the Los Angeles refining area. This company also presently has pending before the Office of Defense Mobilization an application for a certificate of essentiality.

I appreciate the opportunity of appearing before this committee for the purpose of offering information, facts, and observations pertinent to the scope of the inquiry being conducted.

In this presentation I shall attempt as closely as possible to limit my statement to the confines of the subject so clearly delineated by Chairman Hébert, and shall depart therefrom only when necessary to correct certain misinformation or impressions left by previous witnesses on matters germane to the general subject.

In light of the limitations set forth by Chairman Hébert in connection with this hearing, we believe that consideration should be given to the following matters: The changing demand for petroleum porducts on the west coast, including both civilian and military demands; present and future supply of crude and products on the west coast; the time at which preparations for any emergency must take place; the new problems in petroleum transportation occasioned by nuclear weapons; and factual information concerning the proposed pipline.

All of the previous witnesses whose testimony is available to the general public have refrained from giving this committee a clear picture of the rapid growth of demand for petroleum products on the west coast and the actual existing demand as determined by the Bureau of Mines. Much time and space has been given to the supply problem, but supply is only important when the actual facts of demands are known.

In speaking of demand, I refer the committee to the table of petroleum demands in district 5 which is attached to your copy of this prepared statement. This table has been prepared solely from Government documents and sources. If you will look at that table, you will notice that demands in district 5 are generally broken down by the Bureau of Mines into four categories, to wit, the strictly civilian demand, within district 5 itself, the military demand, the demand for shipments to Hawaii and Alaska, and the demand for shipments of petroleum products from district 5 to other States.

Two things are not covered by the Bureau of Mines' statistics: First, shipments to foreign countries, and, secondly, demands which the military might make if the products were available on the west coast.

In connection with these two omitted items. we call the committee's attention to the testimony of Mr. Fox, Oil Producers Agency of California, at Los Angeles, in which, on page 185, he refers to certain foreign shipments to the west coast of Central and South America and to British Columbia.

We have been unable to ascertain the extent of these shipments from Government documents, but they are apparently an additional factor of district V demands.

With respect to purchases which the military might make if available in California, we call the committee's attention to a Department of the Interior memorandum from C. E. Davis, Assistant Deputy Administrator to J. Ed. Warren, Deputy Administrator, dated November 13, 1952, wherein it was stated:

> There is a shortage of both crude oil and products on the west coast. The seriousness of the shortage is indicated by the fact that the military has been forced to purchase approximately 37 percent (50,000 b/d) of its west coast requirements from United States gulf coast and Caribbean ports at a substantial increase in cost by reason of the abnormal transportation expense incurred.

At this point I want to depart from my prepared statement for just a moment to call the committee's attention to the fact that on October 21, 1952, Col. Douglas R. Brown, the then executive officer of the Armed Services Petroleum Purchasing Agency, sent a report to Gen. Alfred H. Johnson, of the Munitions Board staff, which report we do not have and are unable to obtain, but we are sure this committee can secure.

It is our information that the report and the tabulations attached thereto will show these things:

(1) That the military was obliged to purchase a large part of the west-coast requirements on the gulf coast;

(2) That such purchases were costing the Government some million dollars per month in transportation cost to the west coast; and

(3) The construction of a pipeline to the coast to eliminate unnecessary charges.

If classified information reveals the same situation today, then the current demand figures would need to be increased to reflect the true demand.

Accordingly, it must be remembered that military demands set forth on the exhibit are actual sales and not what the military might purchase if it had the opportunity so to do except for the high cost of shipment to the west coast.

With these explanations in mind we should like to call attention to the first subparagraph of the table on petroleum demand, which shows that in 1950 the total civilian demand alone in district 5 was 790,153 barrels daily, and that this demand had increased in 1954 to 904,554 barrels daily.

More startling, however, is the fact that in comparing the first 4 months of 1954 with the first 4 months of 1955, you will see that the civilian demand in district V has increased by nearly 80,000 barrels daily to 983,442 barrels daily, which is a 24.4 percent increase over 1950.

We think these increases are even more significant in light of the fact that it has occurred in spite of the claim of Mr. Stewart and oil-company witnesses that the importation of 1,200 million cubic feet daily of natural gas from west Texas and New Mexico has been affecting the need for oil production.

References have been made to population increases on the west coast, but we think the committee will immediately catch the significance on the demand picture of the forecasts of the population in 1960 and 1965 made by the United States Department of Commerce, Bureau of Census.

According to the United States Department of Commerce Current Population Reports, Population Estimates Series, p. 25, No. 108, dated July 3, 1955, the actual total population on April 1, 1950, of the 5 District 5 States of Arizona, Nevada, Washington, Oregon, and California was 15,396,196.

According to a similar report known as Series P–25, No. 110, published February 20, 1955, the Bureau of Census estimates that the population for the same 5 States may reach 21,749,000 by 1960 and 24,948,000 by 1965. A remarkable fact is that of these total increases of roughly 6 million by 1960 and 9 million by 1965, approximately 75 percent of such increases is going to be in California.

It should be apparent from the Bureau of Mines' own figures and the Department of Commerce population estimates that the combined factors of increased usage of oil products, and increased population, are going to require large additional refinery capacities in California and the attendant additional increase in crude to supply the same.

We suggest, therefore, that the position of Mr. Stewart of the Department of the Interior who testified that future crude supplies should be limited to present California refinery capacity is unrealistic.

We are in no position to estimate future military demands, and therefore we make only two observations in connection therewith. With this country now at peace the military is presently buying in district V for delivery in district V approximately 115,000 barrels daily of petroleum products. What this would be increased to in wartime we have no way of knowing except for the second observation, which is an excerpt from a speech made by Maj. Gen. S. D. Sturgis, Jr., Chief of the Engineers of the United States Army, before the construction

division of the American Society of Civil Engineers, at New York City.

Mr. SHORT. I am glad to say now lieutenant general.

Mr. GLASCO. Yes; that is right.

On October 21, 1954, when he stated:

> But the petroleum needs of the last war are indeed only a fractional part of those we foresee should we become engaged in another world conflict.

The Government purchases on the west coast in 1945 amounted to about 400,000 barrels per day and if that amount is a mere fraction of the amount needed in any future emergency as indicated by General Sturgis, the ordinary citizen not having the advantage of restricted military information can well believe that the military demand on the west coast in the event of an emergency might well be a million barrels daily.

No witnesses have yet indicated that it would be possible to shut off the civilian requirements on the west coast without stopping many of our major airplane plants and war industries.

It would seem, therefore, that in any emergency at any foreseeable date within the next 10 years the combined civilian and military demands will be huge and provision must be made for meeting them.

A great deal of this hearing has been occupied by testimony demonstrating the adequacy of a supply in district V for future peacetime and wartime requirements. All of the witnesses had practically the same story, beginning with Mr. Stewart and continuing with the major oil company representatives. The points made by those witnesses may be briefly stated as follows:

1. The adequacy of California's own crude supply;
2. The importation of Canadian crude via pipeline;
3. The new products pipelines in district V;
4. The importation of natural gas;
5. Secondary recovery in California oil fields; and
6. Offshore developments.

Because the members of the committee expressed interest in these supply factors, we should like to make certain observations concerning each one.

If the supply of California crude is adequate, then we should like to have somebody explain why it is necessary to presently import into California for California refineries in excess of 53,000 barrels daily of foreign crude, plus large additional amounts of natural gas, gasoline, and lube stocks from the gulf coast.

We suggest that maybe the answer to the necessity of these imports lies in two factors: (1) The actual shortage of California crude; and (2) poor yields of many of the heavy California crudes.

The average gravity of Middle East crude is 35.0 and that of the west Texas crudes 40.2, while that of California crudes is 27.3. This variation in gravities makes it desirable for California refineries to have these foreign crudes to obtain the lighter products which are in greater demand.

In fact, as Mr. Stewart pointed out, these heavy California crudes are forcing new catalytic equipment in California refineries in order to utilize them.

This fact will be further borne out by reference to the refinery yields of California compared to other States shown on table 8 of any Bureau of Mines monthly petroleum statement.

As this committee learned in California, there is a difference of opinion between members of the California oil industry as to the adequacy of California's own crude supply. Standard Oil of California, through Mr. Petersen, thinks they may need a 220,000-barrel line for crude in emergency.

Mr. R. G. Follis, chairman of the board of the same company, stated in 1953 as follows:

> Frankly, Standard Oil Co. and, I believe, the other refiners on the west coast, are in a pretty tight spot so far as crude oil supply is concerned. * * * In the years following the war, our production attained still higher levels, until it presently is within reaching distance of 1 million barrels a day. * * * We are not finding the really big oil fields which characterized our former history. Furthermore, California has been producing a considerably higher percentage of its reserves than the balance of the country * * * foreign imports to the west coast may be necessary for some years to come.

On the other hand, Messrs. Minckler and Fox stated that additional crude would not be needed in peace or war.

The uncontradicted fact that California now imports crude in peacetime should not encourage faith in the sufficiency of their supply in wartime.

2. The importation of Canadian crude via pipeline: Mr. Stewart, of the Department of the Interior, in his testimony has laid great stress upon the 300,000 barrels daily capacity of the Trans-Mountain pipeline and the reliance to be placed thereon in an emergency.

In this he was joined by other oil company representatives.

Without deprecating the importance of such serious questions as Canada's own needs, lack of United States control and tanker shipments of such crude to California, the cold hard fact is that today, and at no foreseeable time in the future, is there any such thing as a 300,000 barrel daily capacity.

Mr. Spratt, president of the Trans Mountain Pipeline Co., who testified at the behest of the Western Oil & Gas Association, made it clear that:

(1) There were no present plans to increase the capacity of said line to 300,000 barrels daily now or in the future.

(2) That if the line were increased it would take 18 months, or "closer to a year under emergency conditions," to bring the line up to 300,000 barrels daily.

We wonder if these witnesses are willing to guarantee this committee and the people of the west coast that there will be 12 to 18 months time to increase such a line after the emergency is upon us.

If so, then why does Mr. Stewart not believe that any reliance should be placed upon a like period for building additional refinery capacity in an emergency.

Happily, we feel this committee will look to the facts as they are, not what they some day might be.

3. The New Products pipelines to district 5: Only a few remarks need to be made in connection with existing and proposed products lines to district 5 from interior points.

A. The Southern Pacific pipeline: This line is built to carry products only, and under present plans will bring no products into California, where the big present and future demand is and will occur, without the reversal of the line, and its initial capacity as constructed will be 13,400 barrels per day (the capacity of the line from El Paso

to Phoenix), with a maximum capacity in that section of the line of 24,000 barrels per day.

B. The Yellowstone and Salt Lake pipeline: The only two pipelines actually supplying products to district 5 are the Yellowstone line from Montana to Spokane, with a capacity of 30,000 barrels daily and the Salt Lake pipeline from Salt Lake City to Pasco and Spokane, Wash.

Contrary to the testimony and charts of Mr. Minckler, this line——

Mr. GAVIN. At that point, pardon me for interrupting—who is Mr. Minckler?

Mr. HÉBERT. He testified on the west coast.

Mr. GLASCO. He is president of the General Petroleum Corp., which is part of the Socony Vacuum crowd.

This line does not have a capacity of 42,000 barrels daily. The total capacity of this line into district 5 is only 22,500 barrels daily. Its larger capacity referred to by Mr. Minckler does not extend beyond Boise, Idaho, which is not within district 5.

Mr. COURTNEY. Your source is the Oil and Gas Journal?

Mr. GLASCO. Beg pardon?

Mr. COURTNEY. Your source of that information is given at the bottom of the page?

Mr. GLASCO. Yes.

Mr. COURTNEY. Oil and Gas Journal, February 14, 1955?

Mr. GLASCO. Yes.

Mr. GAVIN. It started in Oil City, Pa. It might be interesting to put that out.

Mr. GLASCO. Thus, operating at maximum capacity, the only products lines into district 5 at the present time are 52,500 barrels daily, made up of the 30,000 barrels daily Yellowstone pipeline and the 22,500 barrels daily Salt Lake pipeline. There is no testimony that these pipelines will or can be increased beyond that capacity in time of emergency. The only other possible extension of products lines is the limited Southern Pacific products line referred to above.

The total capacity of all these products lines will not even equal the increase in the civilian demand in district 5 of 1955 over 1954, which amounted to approximately 80,000 barrels daily.

4. The importation of natural gas: All witnesses opposing the construction of a pipeline have placed heavy reliance upon the charge that natural-gas importations into district 5 will reduce the demand for petroleum products, and have asserted that such gas importations must be taken into consideration in meeting the demand of district 5 for petroleum products. There are two major errors in such a position: First, those witnesses have failed to show what the demand is for such natural gas in addition to the figures for the petroleum products demands put out by the Bureau of Mines.

In other words, you cannot consider natural gas in meeting petroleum products demands unless you add to the petroleum demand figures the demands for natural gas.

Secondly, since 1950 the supply of natural gas in California has grown from 1,936 million cubic feet per day in 1950 to 2,704 million in 1954, of which 1,282 million was imported from west Texas and New Mexico.

Yet we respectfully call to your attention the tremendous increase in petroleum products demand that has gone on in district 5 during

the time that all of this gas has been used in California. Mr. Stewart's testimony and that of others who have testified indicates that there is anticipated another 900 million cubic feet of gas to be imported into California and the Northwest within a few years, but there is no more reason to believe that this importation will have any appreciable effect upon the demand for petroleum products than the 1,282 million cubic feet presently being imported has had.

The facts speak for themselves; in spite of natural gas being imported, the demand for petroleum products is growing by leaps and bounds. In the Northwest a large part of such gas importations will go to replace gas presently being manufactured for domestic use and for conversion of home appliances not now using petroleum products.

When all of these facts are kept in mind, the role of natural gas in supplanting petroleum demands becomes minimal.

Secondary recovery from oilfields in California has been fully explained and asserted to be one of the salvations of the crude supply in California in times of emergency. Yet the oil industry's own witness Frank G. Miller, of Stanford, candidly stated that—

> secondary recovery methods have been applied to a very limited extent in California to date—

and while the same witness was hazy as to its cost, commonsense would seem to indicate that if it is both feasible and economical it would presently be used. Until secondary recovery results in real production it remains a possibility for emergencies if—but only if—the emergency gives sufficient time to install the necessary equipment to make it a true factor.

Here again the opponents to a pipeline have suggested to the committee that national security can rest in part upon the availability of offshore oils. But what are the facts, by their own testimony? Mr. Stark Fox in his testimony said, first, that there may be as much as 100,000 barrels daily of offshore oil available, but that must be qualified by his further statement that such capacity will not be available "until 5 years after such fields are opened." The fields are not as yet opened, and the preliminary exploratory work remains to be done.

True, we have here another possibility of additional supply, but in our current defense picture it still is only a possibility.

We make no pretense of having military knowledge of what will occur in any future emergency, but from newspaper articles and statements of the military it is safe to say that attacks on our country by nuclear weapons are a danger which cannot be doubted. As Maj. Gen. S. D. Sturgis, Jr., stated on last October 21:

> Should war come in the future, we may envision multiple strikes with nuclear weapons at any and all portions of our farflung modern battle order, from the frontline troops clear back along the line of supply to the production centers at home. In swift reaction, the whole vast array must disperse, by ship or air or truck or rail, to small beach and airheads, to small units speeding across country, to high-performance aircraft searching the skies, supported by a flexibly organized and mobile production and supply system—all moving and working and keeping contact largely by means of petroleum and its products.

As a graphic illustration of what a nuclear attack might do to the California oil wells and refineries, I have several copies of a map which shows the intense concentration of wells, holding tanks, and refineries in the Los Angeles area. If the members of the committee will take a look at these maps—I would like for you to have these maps, please.

Mr. SHORT. I might say to the witness, Mr. Chairman, that we flew over this area as we left Los Angeles the other day. But these are excellent maps.

Mr. GLASCO. I would like for those to be made part of the record, if you don't mind, please.

(Glasco exhibit 1.)

Mr. GLASCO. You will notice that those maps, gentlemen—that the center map shows those circles. The first one in the center there is a mile radius, the next one is the 2-mile radius, and then we have the long line, where a bomb dropped in this area would take in a 3½-mile radius. You will also notice in green that that is the oilfields on the west coast, which is a very closely drilled and concentrated area.

And you will see the old Signal Hill area over here to the right. We have tried to illustrate there what a bomb would mean in this particular area.

You will also notice that the oil tanks and all your storage facilities on the companies are well within this range.

Mr. MILLER. Just looking at this, isn't there a slight mistake?

Isn't this thing that you have, marked "1-mile"—isn't that actually a 2-mile radius?

Mr. GLASCO. No. It is a 1-mile radius.

Mr. MILLER. I just compared it on the scale.

Mr. GLASCO. That map has been reduced to half size.

Mr. MILLER. I just prepared a scale here and I think——

Mr. GLASCO. If you notice, the scale has been reduced by one-half, too.

Mr. MILLER. The scale and the map have been reduced both, to me.

Mr. GLASCO. Excuse me just a minute. I would like to show you this: This is reduced one-half size.

Mr. MILLER. That is all right. This is reduced one-half. There is 1 mile. Now, remember, in this part out here—there is your half mile. This starts at zero here. So that is a 1-mile radius.

Mr. GLASCO. Well, let me tell you——

Mr. MILLER. Just a minute. Let me show you something. I know what I am doing. That is, where you have a 1-mile radius is a 2-mile radius.

Mr. GLASCO. Well, I would like to explain that, if you will allow me.

Mr. MILLER. All right, you explain it.

Mr. GLASCO. All right.

This is a national map. This is a map by the Department over here that costs 50 cents apiece. They are all joined together. The circle was drawn off the scale at the bottom.

Mr. MILLER. The scale as I have just shown you——

Mr. GLASCO. But the map was reduced to half size.

Mr. MILLER. I will submit it to any engineer and let him determine it.

Mr. GLASCO. That is all right.

Mr. HÉBERT. Continue your testimony.

Mr. MILLER. Incidentally, if you know the Los Angeles area, you know that 1 mile is a pretty small distance.

Mr. HÉBERT. Los Angeles? The longest mile in the world is in Los Angeles.

Mr. SHORT. The bottom of page 14, you were.

Mr. HÉBERT. All right, Mr. Glasco.

Mr. GLASCO. If the members of the committee will take a look at these maps you will notice that it would be possible with one well-placed bomb to wipe out a good percentage of district 5 supplies. If this were done, then it would be physically impossible to replace those supplies by rail or tank car—not only because of the damage to the Los Angeles terminals of such means of transportation, but because World War II demonstrated beyond doubt that the railroad lines are physically limited in what they can handle.

This fact is clearly demonstrated by pages 94 and 95 of the volume Petroleum Administration for War, of which I have several copies that I will hand the committee as exhibits.

(Glasco exhibit 2.)

Mr. COURTNEY. Mr. Chairman, may I ask a question of the witness?

Mr. GLASCO. Yes.

Mr. COURTNEY. I take it that this reproduction is from an official document; is it?

Mr. GLASCO. Yes.

Mr. COURTNEY. And not from a copyrighted source?

Mr. GLASCO. No. It is from the Petroleum Administration for Defense.

Mr. COURTNEY. Bulletin.

Mr. GLASCO. The same comes out of the Department that Mr. Stewart is head of, over here.

Mr. COURTNEY. It is a public bulletin?

Mr. GLASCO. It is a public bulletin and prepared by the PAD, Petroleum Administration for Defense. It is available.

Mr. COURTNEY. I just wanted to be clear there are no copyrights involved.

Mr. GLASCO. That is right.

Now, there has been a question as to the tank car shipment. I would like to read this into the record here.

The long experience gained in routing tank cars to the east coast provided incalculable value when the mounting tempo of the Pacific war made it necessary to supplement California's peak production with oil from the interior of the country. Until May 1943, tank car shipments to the west coast seldom averaged more than 10,000 barrels daily, mostly consisting of gasoline and other special military products. Beginning in June, however, an additional deficit of about 30,000 barrels a day developed and deliveries of product by tank car, mostly from Texas, reached the 40,000 barrel level in September 1943, and stayed at that level until 1944. Even this relatively small movement required careful coordination, more than 4,000 tank cars had to be used when they could ill be spared from the east coast service. (See chart on p. 95.)

This chart reflects—it shows the buildup on the right side there.

In the summer of 1944, west coast production and refinery runs had reached peaks far above any former records, but still there was not enough oil there to fuel the drive to Japan. Tank car shipments mounted rapidly to more than 100,000 barrels a day, and by May, 1945, had climbed to an average of 165,000 barrels. During the week of June 9 the average was 192,000 barrels daily.

It is difficult to find the words to describe the problems involved in moving that quantity of oil across the Rockies. Undoubtedly, it was more difficult than moving five times as much over a longer distance in the east-coast service.

The main limiting factor was the small capacity of the railroads themselves. Only 7 lines cross the Rockies, and they are all single-track except for a portion of 1 of them. Competing with oil for the use of these tracks were hundreds of thousands of men bound for the war, and thousands upon thousands of tons of other war material. Therefore there was a definite ceiling in the number of cars which could be handled.

As on the east coast, then, the solution was symbol trains. During the June 1944 to June 1945 period of large shipments to the west coast, from 10,000 to 14,000 cars were used; the maximum, with oil as a priority shipment in June to July 1945, was 17,400 cars, the limit which could be handled by the railroads.

I want to make this part of the record.

Mr. COURTNEY. Mr. Chairman, the witness requests that this portion of his statement be made a part of the record.

Mr. HÉBERT. Without objection, it will be made a part of the record.

(The statement is as follows:)

CRUDE FOR MIDWESTERN REFINERIES

Before the war the large refining industry in the Midwestern States has been almost self-sufficient in respect to crude-oil supplies, but gradually the declining production became less and less able to fill the demands of the refineries. Only outside the area—and that meant the Southwest—could enough crude oil be obtained.

Normally that would have been a job for the pipelines; in fact, before the war there had been excess pipeline capacity which might have filled the gap. But the east coast emergency had come first, and every available pipeline, including the new ones, was busy carrying oil past the Midwest into the East.

Here again the tank car had to assume a large part of the load. But there was a stumbling block in the beginning. Railroad rates were so high that they practically precluded transportation of crude by tank car.

Those responsible for devising means of transporting crude from the west Texas fields to the refineries in district 2 decided that the only feasible way to remove the block was by means of a compensatory adjustment plan similar to that by which RFC eased east coast transportation costs.

After PAW paved the way a committee of 51 refiners of district 2, to expedite action, went to Washington and on January 10, 1944, placed their plan before Economic Stabilizer Fred M. Vinson. They pointed out that there was more than 200,000 barrels of idle refining capacity in district, that normal means of transporting crude into the district was the pipeline system, that, this was no longer available to move west Texas crude (because it was being used to move oil to the East), and that under prevailing conditions refiners of district 2 could not reach out for crude supplies if they were to move by rail. They argued that, with OPA-fixed prices for products, they sought only to recover extraordinary costs growing out of the war.

Economic Stabilizer Vinson recognized the need and the Midcontinent Crude Compensatory Adjustment Regulation No. 5, retroactive to December 4, 1943, was issued on January 22, 1944. Under the regulation, adjustments could be claimed by district 2 refiners on west Texas sour crudes, sweet crudes from any part of Texas, crudes from parts of Louisiana, Arkansas, and Wyoming, and also on shipments within district 2. Traffic-department facilities of several companies were utilized to compute the excess cost of tank-car transportation over normal pipeline transportation. And once again Government-industry cooperation had proved its value in surmounting obstacles.

Mr. GLASCO. Likewise, the limitation on tankers as a means of supply to either coast in an emergency has been demonstrated to be so problematical that no one today seriously contends they would be sufficient. However, for the convenience of the committee I am submitting two small maps showing tanker distances and the subhunting ground they must traverse.

Here are some more maps I would like to hand you.

(Glasco exhibits 3 and 4.)

Mr. COURTNEY. Mr. Glasco, with reference to these copies, again, the same question.

Mr. GLASCO. Yes.

Mr. COURTNEY. Is there any question of copyright involved?

Mr. GLASCO. No; there is no copyright involved in there.

Mr. COURTNEY. And what is the source?

Mr. GLASCO. Wait a minute, excuse me. This may be. This one here may come under that, because that is part of the Standard Oil of California's report to the stockholders, explaining to them how they enjoyed such a good position out there by being isolated from the rest of the world. So this was——

Mr. COURTNEY. Now, that is the second document. Well, we will solve that when we come to it.

Mr. GLASCO. All right. We are to it now, so——[Laughter.]

Mr. FISHER. Mr. Chairman, since this is not going in the record, I think you might briefly put in the record what the exhibit shows.

Mr. COURTNEY. Now refer to this first exhibit, if you will.

Mr. GLASCO. All right.

Mr. COURTNEY. I don't think that is producible in the Government Printing Office.

Mr. GLASCO. All right.

Mr. FISHER. Just outline the distances that are set forth in the Standard Oil release.

Mr. GLASCO. Yes. You will notice that this map shows the Permian Basin of west Texas and New Mexico, which is the focal point of the big reserves in west Texas.

Mr. COURTNEY. Mr. Glasco, that is not a Standard Oil document, is it?

Mr. GLASCO. Oh, no. This is of our own.

Mr. COURTNEY. This is something that you prepared yourself?

Mr. GLASCO. Yes; and it shows there from the corner of New Mexico that it is 886 miles. However, their line has been increased from Midland, Tex., which makes it a distance of 1,058 miles. You will notice that in shipping crude oil from west Texas to the gulf coast is a distance of 550 miles. The crude that we ship out in that district has to go to the gulf coast or to the Great Lakes area.

Now, then, to pick up that crude and/or products in the Houston area and take it around to the Los Angeles area is a round trip of 8,812 miles.

Mr. FISHER. Of course, that takes you through the Panama Canal.

Mr. GLASCO. That is the Panama trip.

Mr. FISHER. If the Panama Canal were knocked out, it would be much further; wouldn't it?

Mr. GLASCO. I imagine it would be quite a distance.

Mr. MILLER. Just a minute. You said this was a round trip.

Mr. GLASCO. A round trip; 4,400 miles distance there; yes, sir. Tankers seldom have, you know, returning cargo. So it is limited to that.

Mr. HÉBERT. All right. Continue.

Mr. GLASCO. All right. We have that map.

Mr. COURTNEY. You have this exhibit from the Standard Oil.

Mr. SHORT. A tanker really has to travel 8,812 miles in order to deliver its cargo.

Mr. GLASCO. Cargo, yes; because there is no back-haul on it.

Mr. SHORT. It has to get back to its source of supply before it can deliver?

Mr. GLASCO. Yes, sir.

Mr. COURTNEY. Mr. Chairman, so the record will be clear on it, may the map to which the witness has just referred in his testimony

be marked as an exhibit? I think it better be called Glasco exhibit No. 3.

Mr. HÉBERT. Without objection.

Mr. SHORT. Yes.

Mr. COURTNEY. Again subject to the same problem. If it can be reproduced by the Public Printer.

Mr. GLASCO. Well, this came out of I think last year's statement of the Standard Oil Co. of California.

Mr. COURTNEY. Now you are referring to a document which will be marked, Mr. Chairman, "Exhibit 4" of Mr. Glasco's testimony.

Mr. GLASCO. You will notice that they have outlined the mileage in nautical miles, from Arabia to California. That is 11,400 miles. Then you also have the Sumatra mileage of 7,900 miles. And you will notice in order to transport 18,500 barrels per day from Sumatra to Los Angeles area, it will take 13.2 tankers, while if you transport 37,500 barrels per day, it would take 18.3 tankers.

Now, the total of the 56,000 barrels a day: It would take 31 tankers in operation. So this—it shows that it is isolated country out there and far from the reserves. I think that is what they were trying to point out in their report.

With a pipeline of 400,000 barrels daily capacity into the Los Angeles area, crude, gasoline, jet fuel, and the like could be available at or near Los Angeles to meet such emergencies.

The observation has been made by many that in any nuclear attack we will not have the same opportunity to prepare our defense that has been afforded us in the past. If and when such attacks occur, we shall have to defend with what we then have—not what we might be able to get at some future time. Accordingly, it seems to us that in any consideration of the adequacy of supply of oil and oil products at any particular point in our Nation in the event of any emergency that supply must be there and ready when the emergency occurs and not be merely on the drawing boards or in somebody's mind.

The witnesses from the oil industry on the west coast and Mr. Stewart, of the Department of the Interior, are recommending to this committee that this country should depend for its oil supplies in district 5 upon (1) a Canadian pipeline, which will take a year and a half to bring to 300,000 barrels daily capacity after the emergency; (2) 3 limited-products pipelines, one of which, the Southern Pacific pipeline, they suggest could be increased in size after the emergency has arisen; (3) the undeveloped offshore oil reserves, which by their own testimony will not reach 100,000 barrels a day capacity until after 5 years' development; (4) Mr. Petersen of the Standard Oil Company of California, recognizing that 220,000 barrels daily crude capacity line would be necessary in time of emergency, suggests this country wait until the emergency arises; and (5) finally, they recommend to this committee and this Nation that it rely upon secondary recovery methods in overworked oilfields, which methods have been so impracticable that their own witnesses admit have not as yet been adopted to any appreciable extent.

Mr. RIVERS. Could I ask a question there, Mr. Chairman, or do you want him to finish it first.

Mr. HÉBERT. Let him finish.

Mr. GLASCO. On the contrary, it is our suggestion to this committee that there be presently constructed between the vast oil reserves of west Texas and New Mexico a 24-inch pipeline, which when constructed will have these advantages from the standpoint of defense:

1. Ability to supply crude and natural gasoline for refinery use in Arizona and California of up to 400,000 barrels daily.

2. Such a pipeline in the event the California refineries are damaged by nuclear weapons could be immediately converted to sending out products such as jet fuel, gasoline, and the like, for dispersal to the military on the west coast.

3. Should the occasion arise, said line can be reversed for the shipment of oil products to the East from California.

4. If built immediately, it will be ready for an emergency when it occurs and wherever it occurs.

5. As a common carrier, it will be available to all companies all along its route from west Texas to California, including Standard of California, and right here and now I will state that this pipeline will give to Standard of California a contract of any duration to carry crude from west Texas to El Paso at a price 25 percent less than Standard's posted price will be for crude over the new line they now have so suddenly found it advisable to build.

Mr. RIVERS. Have you made that proposal to Standard?

Mr. HÉBERT. Let the witness continue.

Mr. GLASCO. In summary, I should like to briefly state what appear to us to be necessary conclusions to be drawn from the available testimony of this hearing.

First: The demand for oil products in district 5 of the west coast is increasing at a very rapid rate, and the expected population increases indicate that that increasing usage is going to continue. This conclusion is based upon Government documents controverted by no one.

Second: The availability of usable crude in California for California refineries only is a controversial issue among the members of the industry themselves, as evidenced by Mr. Petersen's statements of the desirability of a crude line in emergencies, and Professor Flaville, of Stanford, who concurs that California now is, and will be, an importer of oil.

On the other side of the picture, Mr. Minckler and others of the industry contend that there is plenty of crude. Which of these groups is correct it may not be necessary to decide, but one thing is certain, and that is that the State of California today is not able to produce the crude necessary to meet its own California refinery demands, as shown by 53,000 barrels daily imports of crude into California alone, plus the large additional amounts of natural gasoline and other mixing agents.

Third: All parties agree that if an emergency should occur in California it would be wise to have as big a pipeline as possible. Mr. Petersen talks of a 220,000-barrel daily crude line—Mr. Minckler says no crude is necessary, but that such a pipeline for products should be "as large as it could be built."

Fourth: All the opposition's arguments are flavored by Mr. Minckler's statement that the real opposition to the line is giving someone else "Government subsidy." We commend Chairman Hébert for his clear exposé of the fallacy of this argument, and Congressman

Hess for further bringing out the fact that all of these other product lines which Mr. Minckler so proudly stated were done by industry alone, were, on the contrary, given aid in the form of tax writeoffs.

And I notice this morning's statement of this gentleman that was just here, that they had built 1,400 million—what was that?—$353 million. I imagine that a great portion of that was tax writeoff. They got a good tax writeoff on it.

Mr. MILLER. Well, just a minute, Mr. Chairman. I asked that specific question and I was told that it was all private capital. Now, I would like to know your basis for the statement that it was not, since you are refuting this. I would like to get at the basis of this thing. I specifically asked the question whether it was private capital or not and I was told it was private capital.

Mr. HÉBERT. I think, Mr. Miller, the witness has stated and indicated at this particular time that the Government assistance was in the form of favorable tax writeoffs.

Mr. SHORT. Yes.

Mr. HÉBERT. It was construction by private capital. The same would prevail in the case of Mr. Glasco, who has a certificate of necessity which carries with it a favorable tax writeoff, and under the terms of the certificate of necessity private capital would construct a specific project, but be subject to the favorable terms of rapid tax amortization.

Mr. MILLER. I appreciate that.

Mr. RIVERS. Mr. Chairman——

Mr. HÉBERT. One minute. Let's let the witness finish.

Mr. COURTNEY. He has just a short paragraph on the remainder of the statement.

Mr. SHORT. Yes, time is running out. "Nor to be forgotten——

Mr. GLASCO. Nor to be forgotten is witness Merryweather's review of the Saudi Arabia aid to the major oil companies. These are not matters germane to the issue of the protection of this country, and we think it little behooves those who have received such aid to try to thus cloud the issues.

Finally, I should like to say that I am extremely happy that in this system of government of ours it is possible to have these controversial issues examined by Members of Congress. With all due respect to General White and Mr. Stewart, it seems to us that the determination of an issue so vital to the very existence of this country should not be left in the hands of men who have financial ties with companies so directly affected by the outcome of the decisions that are made. Whatever the decision of this committee will be, we are at least satisfied that the matter will have had fair and impartial consideration.

(The table follows:)

TABLE OF PETROLEUM DEMANDS IN DISTRICT 5

(ALL FIGURES ARE FROM BUREAU OF MINES REPORTS AND ARE BARRELS DAILY)

(a) Comparison of district 5 civilian demands for 1950 and 1954 and of the 1st 4 months in 1954 and 1955, excluding shipments from district 5 to Hawaii, Alaska, and other States

(1)	1950[1]	790,153
(2)	1954 (fn. s)	905,194
(3)	1954 (1st 4 months only)[2]	904,554
(4)	1955 (1st 4 months only)[2]	983,442
(5)	Demand increase of 1955 over 1950 (percent)	24.4

See footnotes on p. 1153.

(b) Breakdown of total demands on district 5, 1954–55 (averaged)

	Civilian	Military	To Hawaii and Alaska	To other States	Total
(1) 1954 [2]	905,194	118,224	36,217	7,372	[3] 1,067,008
(2) 1st 4 months, 1954 [2]	904,554	120,546	33,602	7,142	[3] 1,065,884
(3) 1st 4 months, 1955 [2]	983,442	115,089	33,864	8,168	[3] 1,140,563

[1] Supplied by H. J. Barton of Bureau of Mines on Oct. 18, 1954.
[2] Summary of district 5 demands as set forth in Monthly Bureau of Mines district 5 demands reports:

Demand report No.	Month	Civilian demand	Military demand	Shipments to Hawaii and Alaska	Shipments to other States	Total
	1954					
61	January	915,676	131,645	29,194	6,743	1,083,258
62	February	896,607	110,250	30,534	7,286	1,044,677
63	March	920,033	116,387	33,484	6,805	1,076,709
64	April	885,909	123,900	41,198	7,733	1,058,732
65	May	864,226	104,000	39,646	8,807	1,016,679
66	June	877,868	130,666	39,533	7,100	1,055,167
67	July	868,451	120,192	47,613	7,065	1,043,321
68	August	881,450	116,161	31,355	6,453	1,035,419
69	September	944,067	100,433	29,467	8,368	1,082,335
70	October	920,806	109,904	40,227	7,193	1,078,130
71	November	925,567	120,800	38,933	7,333	1,092,633
72	December	961,678	134,355	33,420	7,581	1,137,034
Total for 1954		10,862,330	1,418,693	434,604	88,467	12,804,094
	1955					
73	January	966,258	108,354	36,000	7,289	1,117,902
74	February	1,011,144	113,821	28,928	8,572	1,162,465
75	March	984,064	123,517	38,194	7,678	1,153,453
76	April	972,300	114,666	32,333	9,132	1,128,431
Total, 1st 4 months of 1955		3,933,767	460,358	135,455	32,671	4,562,251
Total, 1st 4 months of 1954		3,618,217	482,182	134,410	28,567	4,263,376

[3] Does not include shipments to foreign countries.

Mr. HÉBERT. Thank you very much, Mr. Glasco. I think your statement has been very well prepared and very well presented. The committee is most grateful to you for the presentation of your side of this particular issue.

I should like to ask you only about two or three questions and then let the members of the committee examine you further if they so desire.

Of course, as you understand, and you readily acknowledge in your statement, the Chair attempted at the beginning of the hearings to indicate that we are only interested in the military necessity of this particular pipeline. We are not interested at all in its economic features as related to private industry or private capital. I think we understand each other on that point.

Mr. GLASCO. Yes, sir.

Mr. HÉBERT. Now, our decision must be based entirely upon the military necessity in the defense of this country.

Mr. Short, I believe, pointed that out also.

However, I want to ask you two questions along that line—along economic lines, if I may divert in order to get the full picture before us.

Your statement is based a great deal upon the supply and demand on the west coast of the delivery of crude. I think that is correct?

Mr. GLASCO. Yes, sir.

Mr. HÉBERT. And that is based on a peacetime economy. Now, if it is economic to construct such a line and as indicated in your closing remarks, that you were willing to give the Standard Oil of California a 25 percent reduction in their rate of carry over their proposed line to El Paso, if the construction of the line is an economic feasibility—or do you say it is an economic feasibility?

Mr. GLASCO. Yes.

Mr. HÉBERT. You do say it is an economic feasibility?

Mr. GLASCO. Yes.

Mr. HÉBERT. Then you have—you think it is good business?

Mr. GLASCO. Very good business.

Mr. HÉBERT. Then you have a certificate of necessity and you can proceed without Government assistance in any way at all. Why don't you do it?

Mr. GLASCO. Because I am unable to get the financing from insurance companies, because the companies, the large oil companies, have failed to give any support whatsoever.

Mr. HÉBERT. Well, in other words, you cannot convince enough private capital that it is economically feasible.

Mr. GLASCO. I can't unless the companies would give, the large companies would give commitments on through-put agreements.

Mr. HÉBERT. You are begging the question.

In other words, you have failed, or rather you cannot interest enough private capital who shares your viewpoint that such a line is an economic feasibility?

Mr. GLASCO. Well, no, I haven't been able to.

Mr. HÉBERT. I mean, it speaks for itself.

Mr. GLASCO. That is right.

Mr. HÉBERT. Otherwise, you wouldn't be wanting the Government to either lend you the money or guarantee the money.

Mr. GLASCO. Excuse me, you are right.

Mr. HÉBERT. The fact remains that you can't raise private capital, that you can't convince private industry. Regardless of who controls it—now, I am not going into that feature—the fact is that you can't get enough private capital.

Mr. GLASCO. That is right.

Mr. HÉBERT. And you want to build this line primarily then for its economic features and also to assist in the case of a military emergency?

Mr. GLASCO. That is right.

Mr. HÉBERT. Now, on the other side of the picture, I want to ask this question——

Mr. SHORT. Right there, Mr. Chairman.

Mr. HÉBERT. Yes.

Mr. SHORT. How much private capital could you raise?

Mr. HÉBERT. That is a very good question.

Mr. GLASCO. Excuse me?

Mr. HÉBERT. Go ahead and answer Mr. Short.

Mr. GLASCO. $21 million out of $106 million is our equity capital.

Mr. GAVIN. What do you estimate the total cost of the line?

Mr. GLASCO. $106 million.

Mr. HÉBERT. You would need approximately $80 million plus.

Mr. GLASCO. $85 million.

Mr. HÉBERT. $85 million plus.

Now in the event that this line—for instance, let us say for the sake of the presentation that the Government did guarantee the money for the line or did lend you the money for the line and it was built to the Pacific coast, where would the refineries be found and who would finance them to refine the crude that would be sent to the coast?

Mr. GLASCO. Well, I think we would find with the types of crude that we have in west Texas—it is a higher yield of gasoline and a quality crude——

Mr. HÉBERT. But who would build the refineries to receive the crude?

Mr. GLASCO. We have an application and certificate of necessity to build a 15,000-barrel refinery in Florence, Ariz. We also have commitments out of certain refineries out there that we could purchase in the event that we can get a supply of crude from west Texas.

Mr. HÉBERT. Do you have commitments of a sufficient number of refineries to be built along the line of the proposed pipeline to take care of the crude?

Mr. RIVERS. And at the terminus.

Mr. GLASCO. No, we haven't enough.

Mr. HÉBERT. Well, now, do you know that there would be a sufficient refinery capacity to take care of the crude if such a line was built?

Mr. GLASCO. Well, we have a refinery that we figure on buying, and with the one we are constructing, plus the natural gasoline that is being shipped out by tanker to the west coast, we feel that we have sufficient, even without any support from the major oil companies.

Mr. HÉBERT. You, then, feel that sufficient refineries would be built to take care of the crude supplied by this line.

Mr. GLASCO. There is no question about it.

Mr. RIVERS. Now, may I inquire right there, Mr. Chairman——

Mr. HÉBERT. Wait a minute.

What evidence do you have to offer to the committee that such refineries would be built?

Mr. GLASCO. Well, we can demonstrate that the refineries that we have now, have a certificate on, and the ones that is needing of crude and in position to buy on the west coast, would be approximately 60 percent of the throughput.

Mr. HÉBERT. Would you give the committee the affirmative evidence that these refineries would be available in event such a line would be built?

Mr. GLASCO. Yes.

Mr. HÉBERT. You can do that?

Mr. GLASCO. Yes.

Mr. HÉBERT. And there would be sufficient refineries to take care of the crude, which would be supplied in this pipeline?

Mr. GLASCO. Now, when you go to getting final commitments out of the small independenut refineries on the west coast, they are very reluctant to get out in the open and say they will do such and such things, because they know they will have their water cut off in about 3 days if they did openly come out and go to saying that they wanted to get——

Mr. HÉBERT. So you can't supply the committee with a definite commitment. It is merely that you think so.

Mr. GLASCO. Probably 60 percent of it we can supply, that we can supply definite commitments for.

Mr. HÉBERT. Well, supply to the committee definite commitments on the 60 percent. However, that is only for the information of the committee, I repeat. Because we are not interested in the economic position at all, economic posture.

Mr. GLASCO. That doesn't take into consideration any major company, Petersen or any of the rest of them there that say they are short of crude, taking any crude at all.

We can handle this line by the independent refineries without major oil company support.

Mr. HÉBERT. Now, we disposed of the economic picture, which is purely for the information of the committee. And I now ask the final question of you and that is will you agree with the committee or at least with the chairman, that we must rely entirely upon the military estimate or the military evaluation of such a pipeline, relying on their judgment as to highly secret information given us as to their needs?

Would you agree that the position of the committee would be sound?

Mr. GLASCO. I wouldn't say under what I have observed that they would be very sound.

It seems to me like it is a kind of a stacked deck over there, with the domination of the majors.

Mr. HÉBERT. Would you charge the Joint Chiefs of Staff with being a stacked deck?

Mr. GLASCO. No; I wouldn't charge the Joint Chiefs of Staff.

Mr. HÉBERT. I don't know what the Joint Chiefs of Staff would tell us. I am merely trying to get your reaction of the decision we have to make. If the Joint Chiefs of Staff, as the military experts in this country, would inform this committee that it is not an emergency nor a necessity for the Government to so guarantee a line, then, of course, it would follow, don't you think, that the committee would have to concur with the military experts?

Mr. GLASCO. I would say that the committee should go out and seek some more information because they haven't gotten a true picture on what has happened on the supply and vulnerability of the west coast, and the entire picture.

Mr. HÉBERT. Well, of course, Mr. Glasgo, the committee is in no position to say what information it has as of a highly secret nature. That is the reason we held two executive sessions. But the committee itself, I think, would be in a position of having sufficient evidence and testimony to make a decision in this matter.

Mr. GLASCO. Oh, I am sure you can make a decision.

Mr. HÉBERT. And I am not impugning anybody's motives nor do I mitigate your interest in the matter at all, except to point out the committee's own responsibility in order to make the committee's position very crystal clear, that while this testimony is very persuasive—I have never seen a hearing like this that sways from one side to the other as this particular one does, in the years I have been here. Both sides are very persuasive. But in the ultimate, I want to assure you that the committee will come to the conclusion of what is in the best interests of the defense of the country, which I am sure you will agree with.

Mr. GLASCO. I have said that.

Mr. HÉBERT. We are not impugning the motives of anybody or influence of anybody. We want to know the facts as they speak for themselves and I want to make that clear, that the committee will

make its decisions based entirely upon the military necessity of the project.

Mr. GLASCO. Well, we have tried—every document that—we haven't manufactured a thing. Everything that has been used in our exhibits—they came out of the major oil companies' own statements.

Mr. HÉBERT. We appreciate your position.

Mr. GLASCO. We are not in position to go over and get into the archives and find out all the deep secrets and what goes on.

Mr. HÉBERT. We appreciate your position and are very grateful for the fine presentation which you have made here today.

Mr. Short?

Mr. SHORT. No.

Mr. HÉBERT. Mr. Hess?

Mr. HESS. No.

Mr. HÉBERT. Mr. Fisher?

Mr. FISHER. Well, I would like to join the chairman in commending the witness for a very well-prepared and well-documented statement. Practically everything you have said is supported by documents and records; isn't that correct, Mr. Glasco?

Mr. GLASCO. Yes.

Mr. FISHER. One other thing.

Mr. HÉBERT. All right.

Mr. FISHER. The week before last when we had the hearings here there was quite a little bit of testimony about capacity for increase of production in California, and you discussed that here today, and also about the potential out there, in the form of reserves. And there was some reference made on comparison of that with the west Texas field. I wonder if you might put a little something in the record at this point about the capacity of the west Texas fields to increase their daily production.

Mr. SHORT. Mr. Chairman, I am very glad the gentleman from Texas has asked that question, because in our hearings in Los Angeles one witness questioned both the quantity and quality of oil supply in west Texas. And I think it would be well if the witness would give a brief reply to Mr. Fisher's question.

Mr. FISHER. Yes.

Mr. GLASCO. Well, Mr. Fisher, this report—the letter that I have from the railroad commission here is dated January 13, 1955. It goes to show that in districts 7–C and 8—you are familiar with that, I believe. I will have to see if I have a map here. That is the west Texas area, in which you are familiar, and part of your district is out in that country. You know it very well.

This is the map.

Mr. SHORT. How many barrels do you have shut in there?

Mr. GLASCO. We have 1 million barrels a day shut in for the lack of a market, daily.

Mr. SHORT. One million barrels a day?

Mr. GLASCO. Yes; according to the railroad commission figures.

Mr. FISHER. In other words, you could increase it 1 million barrels a day?

Mr. GLASCO. And still be operating within a maximum efficiency rate of production.

Mr. GAVIN. With your conservation program in Texas, how do you know they will permit the release of that oil?

Mr. GLASCO. That happens to be the supply and demand picture.

Mr. GAVIN. I say, you don't know. You are saying it is available. We know it is available. But whether or not the conservation program of Texas would release to you the oil to shoot through the pipeline is questionable. You can't tell how much they will permit you. What the allowables would be.

Mr. GLASCO. It is on a nomination basis.

Mr. GAVIN. You don't have anything definite on that?

Mr. GLASCO. We would go in and nominate for a certain amount of crude.

Mr. GAVIN. In other words, you couldn't say the capacity of that pipeline would be filled at all times from west Texas oil?

Mr. GLASCO. Yes; it could very easily be filled at all times from west Texas oil.

Mr. GAVIN. It could be, yes; if the commission would grant you permission, to permit the allowables of oil.

Mr. HÉBERT. Mr. Fisher has the witness.

Mr. FISHER. Yes. Well, under the policies that are followed by the Texas Railroad Commission, which is the conservation agency for the Government, you do know that the increase in allowables per day would permit you to fill the pipeline?

Mr. GLASCO. Sure.

Mr. HÉBERT. Mr. Bates?

Mr. GAVIN. Have they so stated, Mr. Fisher?

Mr. FISHER. Well, I am talking about the policies.

Mr. GAVIN. Oh.

Mr. SHORT. That is the way they operate. It depends on the demand. The greater the demand the more they release.

Mr. FISHER. That is right.

Mr. GLASCO. It is strictly on a demand basis. You nominate for the amount of crude you have or want for the month. It is a nomination.

Mr. HÉBERT. Mr. Bates.

Mr. BATES. Mr. Chairman, I think Mr. Glasco has made an excellent statement. I don't quite understand the inference which he draws concerning General White in the concluding paragraph of his statement.

I didn't attend the hearings in California, as I indicated originally. Is General White on active duty or is he retired, or what is his classification?

Mr. GLASCO. No——

Mr. HÉBERT. I think—Mr. Glasco, if you will permit, I think the Chair would best be in a position to answer that to Mr. Bate's satisfaction.

Mr. SHORT. Yes.

Mr. HÉBERT. General White appeared before the committee in public hearing here in Washington, and during the course of the examination, particularly by Mr. Rivers and myself, in establishing General White's background and qualification, it developed that General White is the vice president of Standard Oil of New Jersey. He is a Reserve officer, with the rank of brigadier general, called to duty in the Department of Defense.

At the present time he is receiving a salary—or rather he received the pay, of course, as brigadier general, and the difference between the

salary of brigadier general and the salary of his peacetime position as vice president of Standard Oil is made up in dollars and cents by the Standard Oil of New Jersey.

It was also brought out that this was not a particular or a peculiar case as related to General White. It is the policy of Standard Oil of New Jersey to do the same thing for all individuals called to duty and serving in the uniform of their country, regardless of what rank or what position they hold.

That is General White's situation. And that situation is covered under the law by a certain statute, which the chairman released on that particular date. There is no violation of law. The Chair did not touch on the propriety of the situation. It was touched on by several members of the committee, including Mr. Short and Mr. Miller. And the Chair, in making the official announcement, indicated very clearly that we were not drawing on the propriety of it at all.

General White also explained that he is not affected in any way at all by the policies in this particular inquiry which we are making. And he has submitted a definite letter, or definite statement of policy that he must withdraw from any decisions on the policy level which affects the Standard Oil Company of New Jersey.

In the case of Mr. Stewart, it is a different case.

Mr. COURTNEY. Mr. Chairman, may I make a correction?

Standard of New Jersey is not the company involved. It is the Esso Export Corp.

Mr. HÉBERT. All right, Esso Export. That is Standard of New Jersey.

Mr. BATES. Was he appearing before the committee?

Mr. HÉBERT. He was appearing before the committee as a representative of Mr. Wilson, the Secretary of Defense.

Mr. BATES. For the Department of Defense?

Mr. HÉBERT. Yes.

Mr. BATES. And not as an individual?

Mr. HÉBERT. Not as an individual. He is here in an official capacity.

In the case of Mr. Stewart, it is a different situation. Mr. Stewart is employed by the Texas Co. and served for some 30 years, during which time he was retired from that company and is now drawing the compensation of a retired career employee of that company, a compensation to which he contributed during his years of service. He has no connection at all with any oil company or any major oil company, and is now a career employee in the Bureau—rather in the Department of the Interior.

Does that explain that all right, Mr. Bates?

Mr. BATES. I think I understand the situation.

Mr. HÉBERT. All right.

Do you have any further questions?

Mr. BATES. No.

Mr. GLASCO. Mr. Chairman, may I clarify a statement that Mr. Miller had brought up?

I would like to clear this up. How this may was arrived at—(Glasco exhibit 1). It is a national geographic map—not a national geographic map but Government maps, and then drawing the circles on the map and then photostating them. So in so doing, it reduced the circles at the same time, but it did not eliminate this one scale at the bottom. The circles were drawn on the original map and they were

reduced to half-size. So this is really a true and correct statement here.

Mr. HÉBERT. All right.

Mr. Rivers?

Mr. MILLER. Weren't they all photostated?

Mr. GLASCO. Photostated, yes, sir.

Mr. MILLER. At once, one time?

Mr. GLASCO. Attached together, photostated, and the circles drawn on it.

Mr. MILLER. How could the photostat that shows the circle not reduce the scale shown on the bottom of the map which is part of the map?

Mr. GLASCO. Well, the scale was on the map. The circle was drawn on the original map.

Mr. MILLER. I will tell you—It isn't worthwhile. You and I——

Mr. GLASCO. I know, but I didn't want you to think I was trying to hoodwink the committee here into believing I had scaled down the map to make a point.

Mr. MILLER. Any engineer can easily determine it. So there is no need to go into it any further.

Mr. HÉBERT. Mr. Rivers.

Mr. RIVERS. I just wanted to determine this. Did you state—I want to know, so I will be guided on which part of your testimtony I propose to read.

Mr. SHORT. He will read it all, I will see to it.

Mr. RIVERS. I will read it all.

Did you state that once this line is delivered, you will deliver oil in California at 60 percent of what the tanker brings it in there?

Mr. GLASCO. It will be less than that.

Mr. RIVERS. Less than that?

Mr. GLASCO. Much less, about a third less.

Mr. RIVERS. And it will be so attractive from the economic standpoint, to which the chairman digressed, that anybody in his right mind would come to you for crude oil?

Mr. GLASCO. The companies that own the refineries in California own the oil in west Texas, and they have it shut in. The some oil companies own the thing. They own it all over the world. They own that in west Texas. All they would have to do is to ship their own oil. I don't own the oil. They own it themselves.

Mr. RIVERS. That is right.

Mr. GLASCO. They ship their own oil out and make it available in the west coast.

Mr. RIVERS. How about the refineries and the smog conditions that the refineries in California allegedly contribute to?

Mr. GLASCO. I think if they would take 300,000 barrels a day of west Texas high gravity sweet, green crude and throw it into the 650,000 barrels or 700,000 barrels of refining capacity on the west coast, that they would eliminate about 40 percent of the smog out there.

Mr. RIVERS. Because of the comparably better quality of the Texas crude.

Mr. GLASCO. Yes; much higher gravity.

Mr. RIVERS. And you say that with no hope of grace or commendation from the State of Texas?

Mr. GLASCO. No. [Laughter.]

Mr. RIVERS. I have made my contribution. Now I can go.

Mr. HÉBERT. Mr. Short, do you have any questions?

Mr. SHORT. No.

I was very much impressed by the excellent statement that was given us.

I think we have had a very profitable hearing. I don't know how much longer it will continue or if there is a particular hurry, but we will hear some other witnesses.

I was wondering whether or not you would like to hear from the railroad commissioner of Texas.

Mr. HÉBERT. If the railroad commissioner of Texas can make a contribution to the inquiry, Mr. Short, we will be very happy to.

Mr. SHORT. If he desires, but he hasn't made any request. If he would make such a request, of course I am sure the committee would be glad to hear him.

Mr. HÉBERT. We would be very happy to have him.

And for the benefit of the members of the committee, we will await the convenience of Admiral Radford, to have him appear before the committee.

Mr. SHORT. Yes. He has been out of the country.

Mr. HÉBERT. He has been out of the country. And as soon as he is available, the committee will hear him.

Mr. SHORT. And I think he should be given a couple of days to rest a bit and then to peruse the hearings that we have held.

Mr. HÉBERT. Yes.

Mr. SHORT. He will be in better position——

Mr. HÉBERT. He is probably the key witness as far as this committee is concerned.

Mr. SHORT. That is right. Of course we will have to hear him in executive session.

Mr. HÉBERT. Well, naturally we will have to hear him in executive session because of the highly secret nature of his testimony.

Mr. Courtney.

Mr. COURTNEY. I have just one question, Mr. Glasco.

In the course of your remarks—you did not have the benefit of the supplemental statement of Dr. Flemming. I would just like to ask your verification on this one statement.

Mr. Flemming says, in reporting to the committee on the status of the certificate of essentiality, that among other things the company is to privately finance $21,500,000. Then he makes this additional statement:

> Its engineers—

meaning West Coast Pipe Line Co.—

> have concluded that an average daily throughput of 75,000 barrels at a 60-cent tariff will constitute a break-in point. The Government, as the guaranteeing agency, is asked to make up any deficiency between the average daily throughput and 75,000 barrels per day.

Now, does that accord with your understanding?

Mr. GLASCO. That is right.

Mr. COURTNEY. Of the arrangements?

Mr. GLASCO. That is right.

Mr. COURTNEY. Or rather with the contents of your application?

Mr. GLASCO. That is right. That is the contents.

Mr. HÉBERT. Mr. Glasco, there is just one other question. You referred to the Canadian line of 18 months. Are you familiar with the testimony that this line—referring to the line to which we address ourselves—could be constructed in 90 days?

Mr. GLASCO. I would, of course—I don't think it could be constructed in 90 days.

Mr. SHORT. 1,050 miles long. It is a 24-inch line.

Mr. GLASCO. Yes.

Mr. SHORT. It is comparable in length to the pipeline from Dhahran to the Mediterranean, across the northern Arabian Peninsula.

Mr. GLASCO. However, there are steel mills on the west coast. The big supply would come out of the steel mills.

Mr. SHORT. If we are ever going to build it, we should build it before the emergency comes upon us, while we have the manpower and material available.

Mr. GLASCO. And another thing about the Canadian pipeline. It is through the Rocky Mountain area, and we are in a frigid region, cold region up there. It would be hard to maintain that pipeline in case of an emergency. And it would be—I can take a 30–30 and keep that thing in operation all winter and never get to service it.

Mr. HÉBERT. Mr. Glasco, who owns the West Coast Pipe Line? You are president. Who owns it?

Mr. GLASCO. Well, Mr. Burt Hull.

Mr. HÉBERT. Who is that?

Mr. GLASCO. Bert Hull is chairman of the board.

Mr. HÉBERT. Burt Hull?

Mr. GLASCO. Burt Hull, H-u-l-l. He is chairman of the board. He built the Big and Little Inch pipelines during the war and built——

Mr. SHORT. They quickly paid for themselves, and the Government sold them at a profit. Why are we holding them back now?

Mr. GLASCO. He built the big line through Arabia. He was president of the Texas Pipe Line Co. for 25 years. He is well——

Mr. HÉBERT. He is the principal stockholder?

Mr. GLASCO. No. He is chairman—he owns considerable stock of the company.

Mr. HÉBERT. Who else?

Mr. GLASCO. Well, the White Weld & Union Securities Corp., in New York City. And about 15 or 20 other independent producers in Texas.

Mr. HÉBERT. Who is the largest stockholder?

Mr. GLASCO. I am the largest stockholder.

Mr. HÉBERT. What percentage of the stock do you own?

Mr. GLASCO. About 26 percent.

Mr. HÉBERT. 26 percent?

Mr. GLASCO. Yes.

Mr. HÉBERT. Thank you very much, Mr. Glasco. We appreciate your appearance.

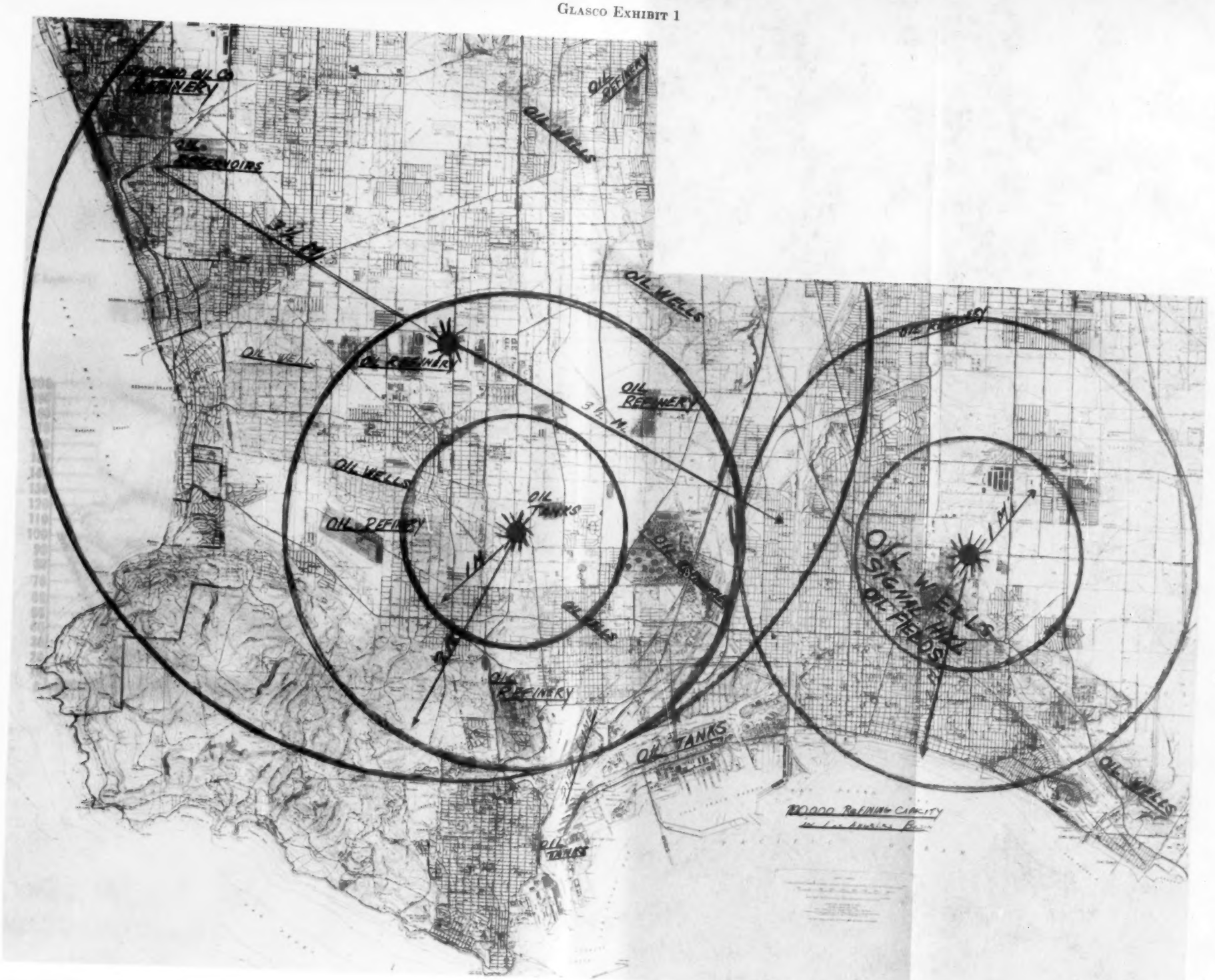
Mr. GLASCO. All right.

Mr. HÉBERT. The committee will stand in recess, subject to call of the Chair.

Mr. SHORT. Good. Very good.

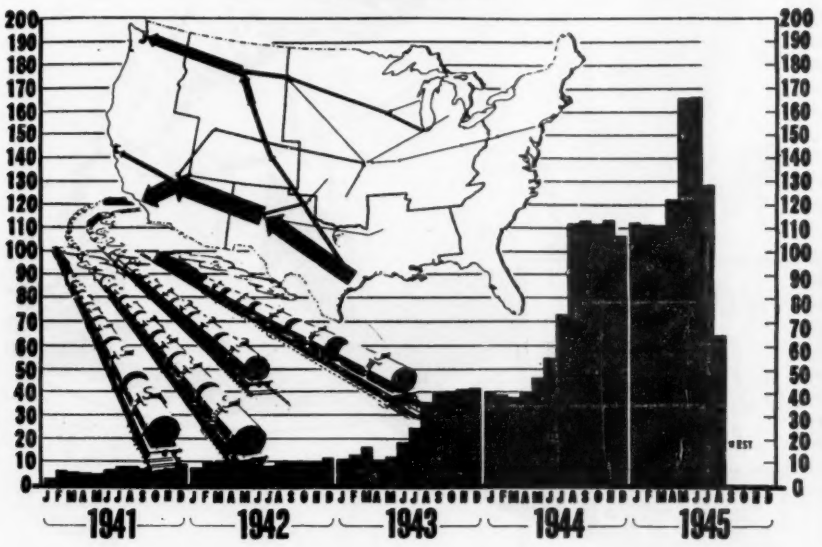
(Whereupon, at 12:04 p. m., the subcommittee recessed, subject to the call of the Chair.)

GLASCO EXHIBIT 1



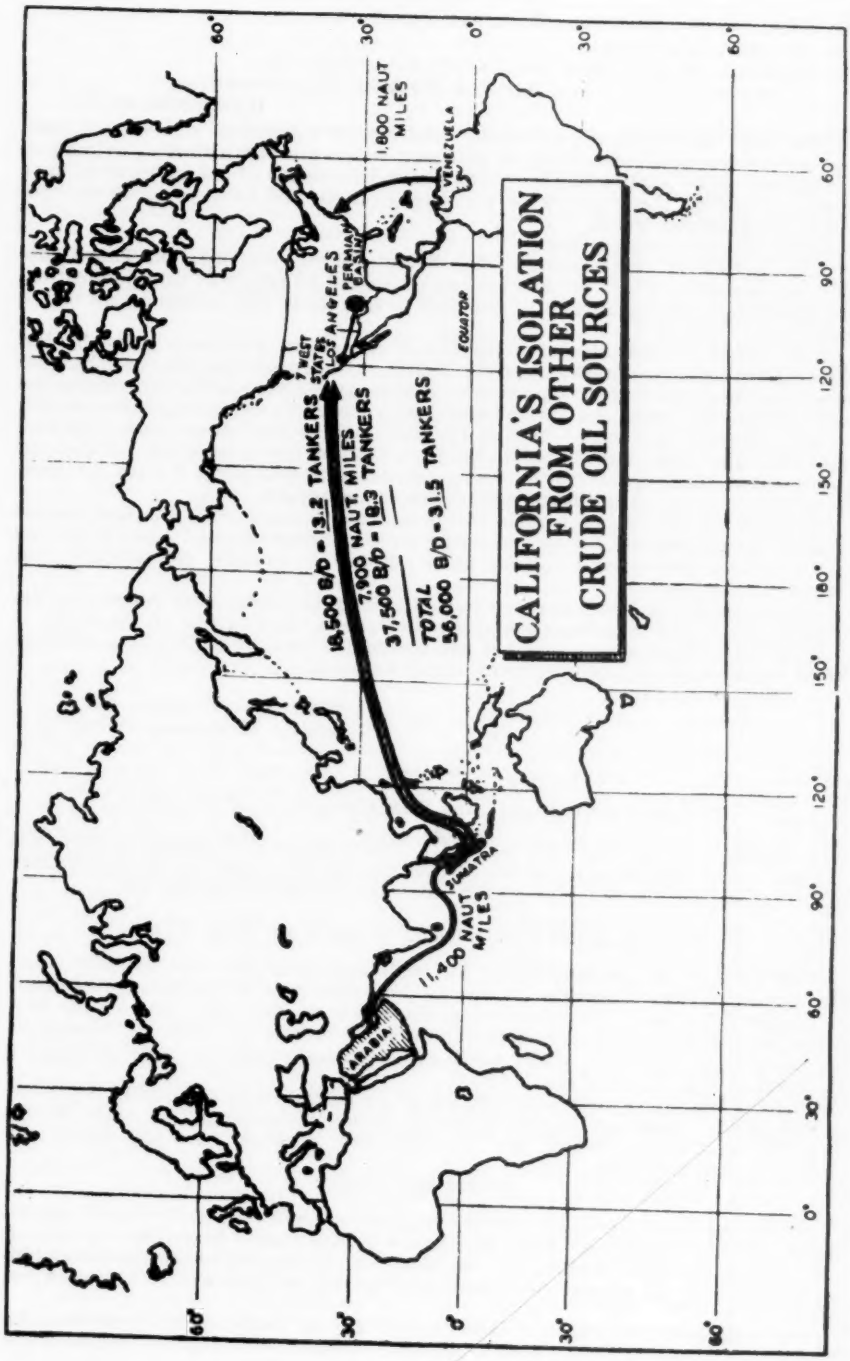
65499 O - 55 (Face p. 1162)

GLASCO EXHIBIT 2



GLASCO EXHIBIT 3

GLASCO EXHIBIT 4



APPENDIX I

WASHINGTON, D. C., *July 27, 1955.*

Re Testimony of L. M. Glasco, Westcoast Pipeline Co.

Hon. F. EDWARD HÉBERT,
Chairman, Subcommittee for Special Investigations,
Committee on Armed Services, House of Representatives,
Washington, D. C.

DEAR SIR: Following my testimony before your committee yesterday I have run across two additional items of evidence which are particularly pertinent to the matter under inquiry and on which I take this means of asking leave to have same brought to the attention of the subcommittee and to have same incorporated in the official record.

The two items are as follows:

1. An article in this morning's Wall Street Journal entitled "Oil Thirst" appearing on page 1 of said publication and continued on page 9 of said publication. A clipped copy of said article is attached to this letter for incorporation in the record.

2. A verbatim transcript of a portion of the sworn testimony given by Mr. Grove Lawrence, vice president of the Southern California Gas Co., at a hearing before the Federal Power Commission on Monday, July 25, 1955, concerning the application of certain gas lines before the Federal Power Commission, which excerpt of testimony begins at line 12, page 1165 of the official transcript and continues up to and including line 11, page 1166 of said transcript. A copy of that portion of the transcript is likewise attached to this letter for the information of the committee and for incorporation in the record.

The first of the two enclosures mentioned above deals with the tremendous upsurge in the demand for petroleum products throughout the United States as a whole with particular emphasis upon automobile gasoline consumption and industry consumption.

The testimony of Mr. Lawrence is particularly pertinent with respect to the importation of gas in California and the shortage of energy items on the coast.

We will sincerely appreciate it if you can find it clear to permit both of these items to become a part of the record of this hearing.

Very truly yours,

WESTCOAST PIPELINE CO.,
LOWELL M. GLASCO, *President.*

[The Wall Street Journal, New York, Wednesday, July 27, 1955]

OIL THIRST: PETROLEUM USE MAY HIT THREE BILLION BARRELS IN 1955 FOR FIRST TIME—PREDICTED UNITED STATES CONSUMPTION WOULD EQUAL THREE-FIFTHS OF 1954 GLOBAL PRODUCTION—BUT OUTPUT OUTRUNS DEMAND

(By Harry T. Rohs, staff reporter of the Wall Street Journal)

NEW YORK.—The national thirst for oil is outracing the most optimistic predictions made some 6 months ago by the petroleum world's sharpest prophets.

Present calculations indicate United States oil use this year may, for the first time, reach 3 billion barrels. Such an ocean of petroleum would be three-fifths as much as all the wells of the world produced last year—the equal of world's production in as recent a year as 1947.

Topping last year's record-busting use of 2.8 billion barrels, it would represent a two-thirds expansion in the country's yearly oil consumption since World War II's end just a decade ago. In 1946, first postwar year, the figure was under 1.8 billion barrels.

SIGHTS ARE RAISED

At the start of this year, the oil forecasters predicted 1955 United States demand 3.5 to 5.5 percent above last year's record high. Now they are raising their sights. Present predictions run from 5 to 7.5 percent above the 1954 high-water mark. A 7.5 percent rise would push oil demand above the 3-billion-barrel level.

The Independent Petroleum Association, an oil trade group, forecasts the increase at somewhat more than 5 percent. Donald Warning, of Standard Oil

Co. (Indiana), focuses on a 5.7 percent increase. Standard Oil Co. (New Jersey), the world's biggest oil concern, says its economists now look for an increase of something better than 6 percent compared with a first-of-the-year 5 percent figure. John Winger, of the petroleum department of the Chase Manhattan Bank, has upped his thinking to 7.5 percent from a 6 percent gait set earlier this year. At the top of the list with a 7.5 percent rise also is a major oil concern which prefers to remain anonymous.

Lest the differences between the latest and earlier forecasts seem unimportant, note that each percentage point change represents a year's consumption of about 30 million barrels of oil.

The 7.5 percent rise at the top of the scale would send growth in oil use smartly past the bare 2 percent rise set last year, although it would not match two of the sharpest gains chalked up since the end of World War II. Sparked by the war in Korea, oil demands in 1950 rocketed past the 1949 pace by some 12 percent to surpass an earlier postwar record of 11 percent posted in 1947. In the 9 years through 1954 oil consumption in the United States has shown an anual average growth rate of 5.9 percent.

A CASE OF INDIGESTION

So the oil industry is well on the way to making another of the sensational recoveries which interlace its record of long-range steady growth. Last year was one of the industry's disappointing years, as Frank M. Porter, head of the American Petroleum Institute, described 1954 some time ago. The country's tremendous appetite for oil gave way to a slight case of indigestion. After rolling along at a rate of gain just under the postwar yearly average, consumption leveled off to a scant 2 percent above that of 1953.

Firing this year's comeback trail for petroleum are the same set of economic factors that are helping many another industry to up record-production figures so far in booming 1955.

Typical of the basic reasons the oil economists give for reshaping their 1955 predictions are these of Dr. Elihu Madison, manager of the economics department of the Texas Co.: "The upsurge in industrial production; higher personal income; the astounding sales of the auto industry which poured new cars onto the Nation's highways at a rate far beyond expectations; and cold weather during the early part of 1955."

GAINS IN PAST 2 MONTHS

The impact of these factors on oil marketing shows up in a sharp gain over a year ago during the past 2 months in consumption of several major products.

It is estimated that America's motor vehicles gulped gasoline in May and June at a clip about 8 percent higher than in the same 1954 period. Industry, often working overtime, burned heavy fuel oils also at an 8-percent faster rate than a year ago.

There's even a psychological factor that has helped boost gasoline use, according to Jersey Standard. Their studies show that a shiny new automobile can be counted on to consume more gasoline than an older one. It's not because of any mechanical factor but due to a human one. The owner of a brand new auto just drives it more than does the average owner of a car which has been a member of the family for a year or more.

DIESEL ENGINES AND ASPHALT

Other products shaping up well in the 1955 petroleum upsurge are diesel oils, which the railroads are using in greater amounts; and asphalt, the use of which has jumped sharply due to the high building rate and because it is getting a somewhat bigger share of the country's road building, a Jersey Standard Oil official explains.

But all is not so well with one of the industry's oldest products, kerosene. In recent months this has been skidding behind a year ago by 6 percent or so. One theory for the dip, according to the economist of one international oil concern, is a steady decline in the space-heater population and further inroads by natural gas and liquid petroleum gas in the heating fields. But this retrogression is far outweighed by gains in other products.

A word of caution accompanies the higher 1955 oil demand forecasts from all economists. The weatherman can cross them up. They base their predictions on a normal winter. If temperatures run above normal for any length of time as they have in some recent years, all bets are off, and the latest forecasts are in for some degree of shading.

ONE DARK CLOUD

Despite the snapback in demand for petroleum products, some economists are inclined to warn about one dark cloud in the bright oil outlook sky. It is excessive refinery output, they say. It plagued the industry last year, and has still not been corrected, with the result that inventories of certain products are out of balance.

A notable example is distillate stocks—light heating oils and diesel oils. On July 15, they were some 14 million barrels or 15 percent greater than the 94,794,000 barrels in storage a year ago, according to the figures of the American Petroleum Institute, trade organization for the oil industry. Gasoline stocks, while some 3 million barrels under the 161,786,000 year-ago figure, are still high enough to be a depressing influence on prices, it is said.

The Nation's oil refineries during the past 6 weeks have been processing crude oil at a rate better than 7,500,000 barrels daily. In the July 15 week refinery runs totaled 7,582,000 barrels, up more than 600,000 barrels over a year ago.

"TROUBLE FOR OURSELVES"

Such a production rate, says the official of one major oil company, is way ahead of what it should be. He expounds: "We are just making trouble for ourselves. Unless refinery runs are cut back considerably we are going to go into the next heating season, which begins in October, with so much distillate fuel stocks that there is apt to be a weak price situation for light heating oils." And he adds that if weather should be warm it will make it much worse.

As a corrective measure, he advocates a cut of at least 300,000 barrels daily in refinery runs, a figure echoed by several of his associates with other major oil marketers.

A. J. McIntosh, chief economist for Socony Mobil Oil Co., notes: "Distillate inventories are troublesome and are going to be more troublesome as we go on." Output of these fuels, he says, "must be reduced because the oil industry simply does not have the capacity to store them if they continue to be produced at their present rates."

RECOMMENDATION OF RUNS

To keep a proper balance between supplies and demand, Mr. Winger in the Chase Manhattan Bank's petroleum review recommends that refinery runs of the oil industry during the current quarter be kept within 7,270,000 barrels daily. Such a rate would be 344,000 barrels daily less than the average for the first 2 weeks of this month. It would, Mr. Winger explains, satisfy the forecast demand for oil and provide adequate refinery buildup of stocks as well. He cautions that while the demand for oil products has improved, it does not mean restraint can be relaxed. An oversupply potential continues as long as excess capacity exists.

At present prices light heating oils are at their summer lows. They usually rise at the start of the heating season and tend to decline with the end of winter as consumption drops with warmer weather. If their production is not curbed, some marketers fear excessive stocks will dampen the prospects for the normal rise in prices in the fall.

As an example, they point to the present position of the industry's No. 1 product, gasoline. While stocks of motor fuel have been pulled under a year ago, they are still relatively high. As a consequence, prices of this product at the big wholesale markets along the Gulf of Mexico have not risen "to compensate for quality improvements this year and higher production costs."

HEAVY HEATING OILS STRONG

Strongest spot in the petroleum products price picture recently has been heavy heating oils, the grades used by industry and the maritime services. Within the past week the price of No. 6 fuel for barge delivery in New York Harbor, for example, has risen 15 cents a barrel to $2.50. In addition to increased demand for this major industry fuel, a factor contributing to the price firmness has been some curtailment in supply due to cutbacks in imports by major international oil concerns in compliance with recommendations of President Eisenhower's oil advisors.

Elsewhere in the free world, use of oil continues to increase faster than in the United States. This year it is expected the free world outside of America will use about 8.5 percent more oil than in 1954. Earlier this year it had been pre-

dicted foreign consumption would rise 7 percent. Last year, when United States consumption slightly more than equaled that of 1953, foreign oil use jumped 9 percent.

EXCERPT FROM TESTIMONY OF GROVE LAWRENCE, VICE PRESIDENT IN CHARGE OF GAS SUPPLY FOR SOUTHERN CALIFORNIA GAS CO., AT A HEARING BEFORE THE FEDERAL POWER COMMISSION ON MONDAY, JULY 25, 1955, RE CERTAIN GAS LINE COMPANIES, BEGINNING AT LINE 12, PAGE 1165, AND CONTINUING UP TO AND INCLUDING LINE 11, PAGE 1166

We have been offered an opportunity to purchase additional out-of-State gas under two letters of intent with El Paso Natural Gas Co. The first contemplates an increase of 100 million cubic feet per day, to come from sources contiguous to El Paso's existing pipeline system. The second, a further increase of 125 million cubic feet per day, is to be supported by the reserves in the Peace River area of British Columbia and Alberta, Canada.

Even if both of these proposals are certified and accepted, we will have to secure substantial additional deliverability, probably from underground storage, to meet peak firm demands within 2 or 3 years. During the first 3 years of operation under these proposals, it can be considered that during offpeak periods substantially all the increment will be sold to interruptible consumers. By about 1968, our forecasts indicate there will be no gas available for interruptible users, even if we get the 225 million cubic feet per day added supply we are seeking.

If we only receive an increase of 100 million per day, there will be no gas for interruptible users after 1965.

A large part of California's water power has been developed, and we have substantially no coal production. Even with the substantial imports of crude oil we expect in the future, it appears that California might face a serious energy shortage.

APPENDIX 2

HOUSE OF REPRESENTATIVES,
Washington 25, D. C., July 28, 1955.

HON. F. EDWARD HÉBERT,
Chairman, Subcommittee for Special Investigations,
House Armed Services Committee, Washington 25, D. C.

MR. CHAIRMAN: At the request of Mr. A. P. King, Jr., president of the Texas Independent Producers and Royalty Owners Association, Austin, Tex., I present to your subcommittee the enclosed statement by him. I solicit the careful consideration of your subcommittee of the views expressed by Mr. King.

Sincerely yours,

PAUL J. KILDAY,
Member of Congress.

STATEMENT OF A. P. KING, JR., PRESIDENT OF TEXAS INDEPENDENT PRODUCERS AND ROYALTY OWNERS ASSOCIATION

I am A. P. King, Jr., an independent oil and gas producer, of Houston. I am president of Texas Independent Producers and Royalty Owners, a trade association representing over 4,500 oil and gas producers and royalty owners.

It is not our purpose, nor do we consider ourselves qualified, to discuss the military and economic feasibility of any particular pipeline project. With respect to the matter under consideration by this subcommittee, however, which is that of the need for a crude-oil line from west Texas to California, we believe we do have certain information which may be helpful.

We wish to emphasize that our interest as an association in this matter is occasioned solely by our conviction that an outlet of this kind will serve the best interests of our industry, our State, and our Nation. We have absolutely no interest in the promotion of any particular pipeline or other enterprise to the benefit of individuals.

We are able to assert with assurance, first, that there is readily available in Texas more than sufficient crude oil, capable of production under every reasonable conservation requirement, to accommodate such a line.

As a matter of fact, in Texas alone, by conservative estimates, there is a reserve productive capacity approximating 1 million barrels per day. A very large part of this excess oil is producible in or immediately surrounding the area where it is contemplated this line will originate.

If evidence were needed of this reserve productive capacity, it can be seen in the fact that, because of the general oil surplus, Texas is currently allowed to produce its wells only 15 days per month. Responsible studies confirm this reserve availability, including one by the National Petroleum Council.

It is recognized in the industry and within informed circles generally, as shown in the findings of every impartial study recently made, that the oversupply of oil here results not from any lack of market in the United States for oil producible here, but rather from imports in excess of that quantity required to supplyment domestic output.

While an unnecessarily high surplus productive capacity exists in Texas, paradoxically, the requirements of the State of California for oil in excess of that available from local production serves to encourage this excessive importation of oil from abroad.

It is axiomatic, therefore, that any pipeline which will make possible the supplying of that available market from domestic sources will help solve the problem of excessive imports. In solving that problem, a contribution will be made toward the defense and economic strength of the Nation.

OVERSUPPLY OF CRUDE

With your permission, I would like to show more clearly the relation between the general oversupply of petroleum on the domestic market and the building of a pipeline from Texas to oil-short California.

Here involved, gentlemen, are matters seriously affecting the security and economy of our Nation. If domestic producers are to be denied available domestic markets, and at the same time deprived of traditional foreign markets because importing companies find it more profitable to supply them from abroad, this war-vital industry will be needlessly jeopardized.

To the extent that a pipeline of this kind can alleviate this situation it will thereby coincide with the best interests of the United States oil industry, the economy of individual States and the Nation, and the security of America and the free world.

All imports today exceed those levels found to be maximium consistent with the national security by the President's Advisory Committee on Energy Supplies and Resources Policy, the National Petroleum Council which comprises representatives of both importing and independent companies, and the Congress of the United States.

In the absence of an economic means of transporting surplus oil in Texas to areas of the Nation which require additional petroleum, the conservation commission of Texas must choose between curtailment of production or contributing to waste. Reducing allowables to the point of half-time production inevitably brings serious consequences to the health and vigor of the domestic oil industry. Because of the long-range nature of drilling commitments and other contractual relationships, the full effect is not reflected completely at once.

On the basis of the best information available to us, there are no sound economic barriers to the construction of the proposed pipeline. Transportation by pipeline from west Texas would cost, we understand, between 50 and 60 cents per month per barrel, a third of the cost by tanker from the gulf, and about a seventh of the cost by rail.

During the last 14 months of World War II, we are informed, the oil shortage on the west coast cost the Federal Government some $111 million for rail transportation from interior points. The same seriously weak logistic in strategic defense of the United States was demonstrated again during the Korean conflict. The Government had to pay a premium in the order of twenty to thirty million dollars for oil purchased abroad or from the gulf coast that had to be transported through the Panama Canal for use of the military in the Pacific.

It seems to us that the soundest way for the Government at this time to avoid a recurrence of this costly and dangerous procedure would be to give reasonable encouragement to the construction of whatever pipelines are necessary to enable domestic sources to supply domestic consumers. It is our judgment that one of the most effective forms of assistance is being rendered by this committee in undertaking to determine some of the real motives behind opposition to the building of pipelines which no responsible person has denied could prove necessary to the defense of our Nation.

DEFENSE ESSENTIALITY

It is impossible, of course, to measure with precision the defense essentiality of any project, so varied are the requirements of war. On the basis of testimony so far, it appears that defense experts differ only on the extent to which the proposed pipelines to the west coast from Texas serve the defense effort.

Recognizing our lack of competence to evaluate a subject of this character, we desire simply to remind those of you concerned with this study of the unfortunate experience during early phases of World War II with attempts to supply any part of the domestic market from abroad.

To provide the most authoritative source available for emphasizing the extreme unreliability of oil from foreign shores, we refer to a publication issued by the United States Government Printing Office in 1946, entitled "The Issue of the Petroleum Administration for War, 1941–45." Excerpts from that publication which follow would seem to offer abundant evidence that we averted the disaster of an oil shortage in America only by virtue of the approximately 1 million barrels per day reserve productive capacity which we had in this Nation at the time of Pearl Harbor.

The section of the book entitled, "Wartime Petroleum Supply and Transportation," page 81, begins with these words:

"Crises were the normal thing. The best laid plans of men could not make it otherwise. A hurricane. A blizzard. A flood, or a train wreck. Or, as happened too tragically often, a tanker going down in flames after a submarine had caught it on its way to deliver heating oil to desperate homeowners whose tanks were showing empty.

"Ironically, misfortune seemed most likely to strike when it could cause greatest grief; in periods of bitter cold weather, or when inventories were most dangerously low; when there was no cushion.

"Each setback brought new dismay to the committees of oilmen who met almost daily during crucial periods in the effort to spread the limited supplies of petroleum throughout the east coast. Solemnly, they would scrutinize the schedules which showed the daily inventories at the large supply terminals along the coast, the movements of trainloads of oil from the Southwest, the pipeline deliveries, the barge shipments and the production at east coast refineries, and still the phones would keep ringing: 'The kids are sick and we're almost out of oil'."

The subsection entitled, "Germans Blockade Tankers," reads in part as follows:

"The beaches of New Jersey, Delaware, and Florida furnish almost the only evidence of enemy destruction in the continental United States. Visible along the high-water mark for miles on these beaches years after 1942 was a winding black ribbon of oil, and just offshore lie the hulks which mark the terrible ordeal of the first war year. They are grim reminders that the Nazis were in almost undisputed possession of the waters of the entire Atlantic coast during the early months of the war.

"In the first 2 months after Pearl Harbor, the submarines caused little damage. Only 7 United States tankers were sunk, 2 of them on the west coast. Tanker deliveries continued at the normal rate during December and dropped only slightly in January 1942, reflecting transfers to other service more than the U-boat menace.

"Then, in February, the wolfpacks struck in earnest. From the Caribbean to Cape Race, no spot was safe. Twelve United States tankers went to the bottom in February, a dozen more in March, the same in April and 14 in May.

"Although boats had to keep running to supply military requirements, no one could doubt the decline of tanker shipments for civilian needs in the face of these 50 sinkings. From then on, until the last year of the war tanker deliveries were an insignificant factor in supplying the oil needs of the east coast.

"Even though the submarines were finally driven from the Atlantic seaboard and hundreds of new tankers slipped from the ways—two of them every 3 days in 1943 and 1944—it was not possible until late in 1944 to increase tanker shipments to the east coast in any appreciable amounts. The exigencies of global war could be met only with tankers; the shortage on the east coast could be met somehow by overland substitutes.

"Tanker deliveries to the east coast reacted quickly to the submarine blockade. Shipments started to dive in February 1942, and by May they amounted to only 173,000 barrels daily, or about 18 percent of the December 1941 total. The low point of the war was reached in April and May 1943—63,000 barrels a day.

From May 1942 to the end of 1943, east coast tanker deliveries averaged only a little more than 121,000 barrels daily—about one load a day for a T–2 tanker.

"Even this small movement was on an uncertain, sporadic, undependable basis. The Navy or War Shipping Administration might decide at a moment's notice to release one tanker for one trip. Occasionally new tankers were given a one-trip run in the gulf coast-east coast service for the shakedown cruise. But not only could these not be scheduled—under wartime security regulations only a few people knew that they were coming until they arrived. Programing of future movements until late in the war for the most part had to be guessed from experience, not from any knowledge of what could actually be counted on. For all practical purposes, the east coast was supplied in the first war years without tankers.

"Yet somehow the shortage was met. And in the last analysis it was the luckiest good fortune that the economics of peacetime transportation had brought the east coast tanker fleet into existence. Without that fleet, the military would have had an insurmountable supply problem overseas."

It is clear from the record that we lacked the necessary pipelines to avert serious distress and jeopardy to our security. What better insight can be had into the future than that provided by this recent history?

For these reasons both economic and military, it seems quite obvious to us that the national interest will be served by any reasonable encouragement which can be provided the building of whatever crude oil pipelines necessary to enable domestic oil producers to meet the requirements of domestic consumers in peace or war.

×